JUAN ACEVEDO

Alphanumeric Cosmology From Greek into Arabic

Forschungen
zum Alten Testament 2. Reihe

Mohr Siebeck

Juan Acevedo

Alphanumeric Cosmology From Greek into Arabic

Juan Acevedo

Alphanumeric Cosmology From Greek into Arabic

The Idea of *Stoicheia* Through the Medieval Mediterranean

Mohr Siebeck

Juan Acevedo, born 1971; studied Classics at Universidad de Los Andes, Venezuela; 2001 BA; teaching Spanish, academic publishing (Islamic Texts Society; The Matheson Trust) in the UK, specialised in Arabic-English bilingual typesetting and Comparative Religion; 2018 PhD from the Warburg Institute, University of London; presently post-doctoral research in Lisbon for the ERC Rutter Project in History of Science.

ISBN 978-3-16-159245-4 / eISBN 978-3-16-159246-1
DOI 10.1628 / 978-3-16-159246-1

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliographie; detailed bibliographic data are available at *http://dnb.dnb.de*.

© 2020 Mohr Siebeck Tübingen, Germany. www.mohrsiebeck.com

This book may not be reproduced, in whole or in part, in any form (beyond that permitted by copyright law) without the publisher's written permission. This applies particularly to reproductions, translations and storage and processing in electronic systems.

The book was typeset by the author, printed on non-aging paper by Laupp & Göbel in Gomaringen, and bound by Buchbinderei Nädele in Nehren.

Printed in Germany.

Acknowledgements

A work of this extension and scope renews the awareness that gratitude tends by nature towards infinity – so many unexpected favourable circumstances, and sources of help and information and good will... Here is an attempt at doing justice to some of them.

This book developed from a doctoral thesis presented at The Warburg Institute, London, and I owe much gratitude to the collegial spirit of the place itself. The Warburg Library was described almost a century ago as 'the one open gate to the cosmopolis of knowledge,' and this holds true not only as regards the layout of the city of knowledge, its avenues and parks which we visit in our minds, but also very palpably in the citizens themselves – and what joy it was to benefit from their advice and convivial conversation.

The thesis itself would have been unimaginable and even impracticable in many ways without the inspiration, encouragement and expert guidance I was privileged to have from Charles Burnett, who not only improved on every detail of my work with the lightest touch and self-effacing generosity, but also shared congenially in the exhilaration of the research.

Among my Warburg colleagues, I would like to thank in particular Guido Giglioni, Christopher Johnson, Jill Kraye, Berthold Kress, Alessandro Scafi and Claudia Wedepohl. Warm thanks to Peter Pormann, who read an early draft of the thesis and made valuable suggestions. I feel indebted to Liana Saif, Bink Hallum and Sébastien Moreau for their inspiring and generous friendship. Other Warburg friends who helped significantly with my research are Eleonora Andriani, Yang Gao, Michael Noble, Adrian Pirtea, Gregor Schwarb and Tassos Tyflopoulos.

My colleagues and friends at The Matheson Trust have made possible the completion of this work in many ways. To Tamar Drukker I owe much gratitude for her help and patience with my Hebrew. Closer to home, I want to thank Rida and Nureen, Adnan and Summer, and in Mérida, Enrique Obediente for his friendship and example. Edgar Guzmán, my first companion reading the *Sefer Yetsirah*, has been very present all along, as

have been my mathematicians Olga, Ramón, Cristóbal and Juan Manuel. My parents inspired in me the love of letters and music, and somehow shared with me *il gran disio*, so whatever is good here is as much theirs as mine.

And at home, my Judith, like our children María Gracia and Elías, has helped me very concretely on this very abstract work, and in many more ways than I could thank her for or that either of us will ever understand.

Some friends and colleagues have contributed with their comments and suggestions after the completion of the thesis, and have thus improved this book greatly in many little ways. Warm thanks to Godefroid de Callataÿ, Toby Mayer, Constantinos Macris, and Leon Conrad.

I dedicate this work to the memory of José Manuel Briceño Guerrero (זצ"ל), who taught me the Greek hexameter on a radiant Venezuelan afternoon twenty-nine years ago.

Juan Acevedo
ERC Rutter Project
Centro Interuniversitário de História das Ciências e da Tecnologia
Faculty of Sciences
University of Lisbon

Contents

Acknowledgements V

Notes to the Reader XIII

A. Transliterations XIII

I. Hebrew Transliteration XIII
II. Arabic Transliteration XIV

Abbreviations XV

Introduction XVII

A. The Concept XVIII
B. Overview XIX
C. Survey of Scholarship XX
D. Methodology Matters XXIII

I Defining the Concept 1

Chapter 1: Notes on Early Alphabetic Cosmology 3

A. Starting from Aristotle's 'Lexicon' 3

I. First Glimmerings 8
1. Etymology 8
2. The Definition 11
3. Atoms and Letters 12
II. Platonic Corpus 12
III. The Constellations 13
IV. Latin Correspondences 14

B. Greek Grammarians 15

I. The Opening Anacoluthon 17
II. Simplicity and Pedagogy 18
III. The Semitic Origin 18
1. Nature-given or Created 20
IV. More Etymologies 20
1. Number and Order. 21
2. Walls and Ramparts 22
3. What about *γράμματα*? 23
V. Attributes of the στοιχεῖον 24
VI. The Four Cosmic Elements 25
1. Why Twenty-Four? More Cosmic Correspondences 26
2. The Moon and the Stars 27
3. The Planets 28
4. Astrological Correspondences 29
5. Microcosmic Correspondences 30
VII. Graphical Layout 31
VIII. Sanchuniathon and the Snakes 32
C. Latin Grammarians 33
D. Conclusion 36

Chapter 2: On the Tracks of Arithmetical Cosmology 38

A. Number and Letter 38

I. Isopsephism, Onomatomancy and Gematria 42
1. Choeroboscus on the Names of Numbers 46
B. Reckoning and Science of Numbers 48
C. Pythagoras and Pythagoreanism 51

1. *Lore & Science* and Further Developments 53
2. Imitation or Participation 56
3. On Creation and Order 57
4. The Pythagorean *Logos* 58
5. The Fundamental Decad 58
I. Philolaos. 60
1. Fragments of Philolaus 61
II. ‘Pythagorean’ Milestones 68
1. Nicomachus and his *Introduction* 72

III. Nicomachus' *Introduction* Tables 74
D. Conclusion 91

II Alphanumeric Cosmology in the Abrahamic Scriptures . 97

Chapter 3: Jewish Sources and Exegesis 101

A. Tanakh and Translations 101

I. Genesis – Creation by Speech 101
1. Psalm 33:6 104
II. Exodus – Bezalel 105
III. Counting the Glory 107
IV. The Potter of Light 108
V. Acrostics 109
VI. Summary 112
B. Philo 113

I. On the Making of the World 114
1. Archetype and Noetic Creation 117
2. The Model is Λόγος 118
3. Numbers: the Tetrad and the Decad 119
II. Chapter Summary: Philo in Perspective 120

Chapter 4: Christian Sources and Exegesis 122

A. Letters-Numerals of the Christic Word-Number 122

I. *Mysteria litterarum*: Textual History 124
1. *Mysteria litterarum* – the text 125
2. 22 or 24 Letters 127
II. Apocryphal Gospels 128
III. A Spiritual ABC in Monastic Literature 129
IV. Measure, Number, Weight, and Augustine 130

Chapter 5: Hermetica, Magic and Gnostic Sources 135

I. Who is Hermes? 137
II. Thoth and the Letters in *Philebus* 139
III. The Creation Elements in the *Hermetica* 141

IV. Magic Phonemes 143
V. Magical Papyri 144
VI. The Twenty-Four Alphabetic Names of Gods 148
A. Gnostic Writings 151

I. *Evangelium Veritatis* 152
II. *Marsanes* 154
III. Marcus the Valentinian 156
B. Conclusion 161

Chapter 6: Alphanumeric Cosmology in Islamic Scripture and Exegesis 163

A. Introduction 163

I. The Linguistic-Logical Aspect 165
B. Starting Point and Influences 167

I. The Arabic Alphabet Order 170
1. The Arabic Letters as Numerals 172
C. The Development of the Science of Letters 176

I. ʿAlī: The Common Source 176
II. Letters in the Ḥadīth Literature 177
III. The Two Branches 180
IV. Some Key Texts 185
1. *Jawāmiʿ al-kalim* 185
2. ‘A limit and a summit’ 186
3. ‘Beyond utterance’ 187
D. Back to Basics: Philosophy & Physics 188

I. The *Metaphysics* 189
II. Jābir and ‘The Element’ 193
III. The ‘Element’ of the Foundation 194
IV. The Balance of the Letters 195

III World Construction: Systems of Cosmic Design 199

Chapter 7: *Sefer Yetsirah*: The Bright Jewel of Alphanumeric Cosmopoiesis 201

A. Selections from the Text 205

I. The Thirty-Two Wondrous Paths of Wisdom 207
II. The Three Modes of Inscribing 209
III. The Absolute Numerations – *Sefirot* 211
IV. The Twenty-Two Elemental Letters 214
B. The Title: 'Creation' or 'Formation'? 217
C. Authorship and Conclusion 219

Chapter 8: Alphabetic Consecration & Metaphysical Foundation 221

A. The Abecedarium in Church Dedication 221

I. The Roman *Gromatici* 224
II. Christening the Land: *mensuratio*/γεωδαισία 226
1. Rabanus Maurus 227
B. The Celtic Connections 228

I. Eriugena 228
Ramon Llull 229
C. Psellos: Letters and Matter 232

I. Aquinas and the Second 'Signified' Matter 234
D. Dante and Hildegard 236

Chapter 9: Islamic Systematisation and the Sublime Letters That We Were 239

A. Abū Ḥātim's Letter Cosmogony 240

B. A Pure Brotherhood 242

I. How Pythagorean are the *Ikhwān*? 244
II. Magic Squares in the *Epistles* 245
III. Music: Prosody: Grammar 247
IV. 'Letters' in the *Rasā'il* 248

V. *Risāla al-Jāmiʿa* – The Comprehensive Epistle 250
C. A 'Sufi' Interim 252
D. Al-Būnī and The Sun of Divine Sciences 255
I. The Letter-Elements in al-Būnī 256
II. The First Paragraph 257
1. The Basics of Letter Cosmology 257
2. Letter-Number Relation 258
3. Joining the Letters 259
III. 'Magic' Squares in the Light of Alphanumeric Cosmology. . . 260
E. Ibn ʿArabī. 261
I. The Place of the Letters 263
II. Letters and Numbers 265
III. The Three Modes 266
IV. The Living Letters 266
F. Conclusion to Part III 268
Conclusion 270
A. Conceptual Conclusion: Echoes and Ramifications 270
I. Art, Artistry and the Arts 270
II. The Universe as Book 271
III. Physics and Modern Physics 273
IV. Linguistics, Psychology and Cosmology 275
V. Metaphysics and Theology 276
B. Historical Conclusion: The Alphanumeric End 277
Appendix A: Latin Grammarians 283
Bibliography 287
Primary Sources 287
General Sources 292
Index 316

Notes to the Reader

Translations are mine throughout, except where otherwise stated, in order to preserve consistency as far as possible in literalness and terminology. In view of the semantic complexity of the study, I have often taken the liberty to force an overly etymological translation to bring out a particular aspect of a word.

A. Transliterations

Single Greek words are indistinctly used in transliteration or Greek script depending on the context. Running Greek text is never transliterated.

Hebrew and Arabic running text is left in the original script, while single words or short phrases are transliterated according to the tables below. Vocalisation is only used in specific contexts according to need, as when a given passage is studied in depth.

I. Hebrew Transliteration

My transliteration combines the two current varieties (פָּשׁוּט ‘simple’ and מְדֻיָּק ‘precise’) of the Academy of Hebrew Language, 2007, and it is almost identical to the ‘General-Purpose Style’ in the *SBL Handbook of Style* (2nd edn, 2014).

א	*a*	ז	*z*	מ	*m*	ק	*q*
ב	*b/v*	ח	*ḥ*	נ	*n*	ר	*r*
ג	*g*	ט	*ṭ*	ס	*s*	ש	*sh*
ד	*d*	י	*y*	ע	ʿ	ת	*t*
ה	*h*	כ	*k/kh*	פ	*p/f*		
ו	*w*	ל	*l*	צ	*ts*		

II. Arabic Transliteration

The transliteration follows the current usage of Brill's *Encyclopedia Islamica* and the Oxford *Journal of Islamic Studies*.

أ	*a*	ح	*ḥ*	س	*s*	ت	*t*
ب	*b*	ط	*ṭ*	ع	ʿ	ث	*th*
ج	*j*	ي	*y*	ف	*f*	خ	*kh*
د	*d*	ك	*k*	ص	*ṣ*	ذ	*dh*
ه	*h*	ل	*l*	ق	*q*	ض	*ḍ*
و	*w*	م	*m*	ر	*r*	ظ	*ẓ*
ز	*z*	ن	*n*	ش	*sh*	غ	*gh*

Abbreviations

BNP	Cancik, H., H. Schneider, C. F. Salazar and D. E. Orton, eds., *Brill's New Pauly: Encyclopaedia of the Ancient World*.
DELG	Chantraine, P., *Dictionnaire étymologique de la langue grecque: histoire des mots*.
DGWE	Hanegraaff, W. J., *Dictionary of Gnosis & Western Esotericism*.
DK	Diels, H., and W. Kranz, *Fragmente der Vorsokratiker*.
DNP	Cancik, H., H. Schneider and A. Pauly, eds., *Der neue Pauly : Enzyklopädie der Antike*.
DSS	Buck, C. D., *A Dictionary of Selected Synonyms in the Principal Indo-European Languages*.
Du Cange	Du Cange, C. D. F., ed., *Glossarium mediæ et infimæ latinitatis*.
EALL	Versteegh, K., et al., eds., *Encyclopedia of Arabic Language and Linguistics*.
EH	*Mawsūʿa al-ḥadīth al-sharīf (Encyclopaedia of Hadith)*.
Ernout-Meillet	Ernout, A., and A. Meillet, *Dictionnaire étymologique de la langue latine*.
GALex	Endress, G., and D. Gutas, *A Greek and Arabic lexicon: Materials for a Dictionary of the Mediaeval Translations from Greek into Arabic*.
GLK	Keil, H., ed., *Grammatici latini*.
Klatzkin	Klatzkin, J., *Thesaurus philosophicus linguae hebraicae (Otsar ha-munahim ha-filosofiyyim)*.
LBG	Trapp, E., ed., 'Lexikon zur byzantinischen Gräzität'.
Lisān	Ibn Manẓūr, *Lisān al-ʿarab*.
LS	Lewis, C. T., and C. Short, eds., *A Latin Dictionary*.
LSJ	Liddell, H., and R. Scott, eds., *A Greek-English Lexikon*.
Munjid	*al-Munjid fī al-lugha*.
Nock-Festugière	Nock, A. D., and A.-J. Festugière, eds., *Corpus Hermeticum*.
OLD	*Oxford Latin Dictionary*.
PGM	Preisendanz, K., and A. Henrichs, eds., *Papyri Graecae Magicae. Die griechischen Zauberpapyri*.
RE	Pauly, A., and G. Wissowa, eds., *Paulys Realencyclopädie der classischen Altertumswissenschaft*.
RIS-Beirut	Ikhwān al-Ṣafā', *Rasā'il Ikhwān al-Ṣafā' wa Khullān al-Wafā'*.
RV	Mansfeld, J., ed., *Die Vorsokratiker*.

Schol. in Dion. Thrax	*Scholia in Dionysii Thracis Artem grammaticam*.
SQ	Nasr, S. H., C. K. Dagli, M. M. Dakake, J. E. Lumbard and M. Rustom, eds., *The Study Quran: A New Translation and Commentary*.
Tāj	al-Zabīdī, M., *Tāj al-ʿarūs min jawāhir al-qāmūs*.
TDNT	Kittel, G., G. Friedrich and G. W. Bromiley, eds., *Theological Dictionary of the New Testament*.

Introduction

At the beginning of this research, as is so often the case in philosophy, there is a feeling of wonder, and there is Plato.

Before entering into the details of the creation of the elements, in the dialogue that bears his name, Timaeus mocks earlier philosophers who referred to the elements as στοιχεῖα (*stoicheia*), 'letters', observing that those στοιχεῖα 'are not even syllables' of reality,[1] meaning by this that these 'so-called elements' (τὰ καλούμενα στοιχεῖα) are already compounds and far from elemental. The pun is involved, and in its complexity it establishes a grammatical model of the cosmos, and naturally, in this model, the letters of the alphabet are the smallest parts of reality. I had barely been exposed to the puzzling and fascinating cosmological doctrines of the *Timaeus* when I first read these lines, but I had already had some acquaintance with the Hebrew *Sefer Yetsirah*, the *Book of Formation*, where the divine Artist creates the universe by means of letters and 'numbers', and the family air between these two works, so distant from each other chronologically and culturally, made a strong impression on me. As I now try to find a concise way to introduce this research work, it occurs to me that it could be safely said to be 'an attempt at uncovering the links or tracing the pathways between *Timaeus* and *Sefer Yetsirah*.' Perhaps by unfolding what is implicit in such formulation, the introduction will be made clearer.

Coming from Plato means not only that this letter cosmology generated much speculation among his Greek successors, but also that through direct translation and indirect influence, it would generate a wealth of treatises and commentaries in Latin, where the word *elementum* is attested with the same combined meaning since Lucretius and Cicero,[2] and then through Syriac translations and directly in Arabic and Hebrew – this is part of the story I mean to tell in the following pages. So it can be said that this is a

---

[1] *Timaeus*, 48b8.

[2] See below, p. 14.

work on the Platonic tradition, and it is a work about the transference of knowledge from Greek antiquity to the Mediterranean High Middle Ages, and thus from Greek into Arabic, Hebrew and back to Latin.

'From *Timaeus* to *Sefer Yetsirah*' means also from a philosophical metaphysical discourse to a discourse pertaining to mystic doctrines of an Abrahamic religion, and so this can also be considered a work on comparative philosophy and comparative religion. But this is all too general, and the reality is that my research in these pages follows a very narrow thread through a long and winding road, 'struggling with every care,' as Aby Warburg intended, 'to cast light on one single obscurity, thereby illuminating the great general development pathways in all their interconnections.'[3] In fact, it would also be fair to inscribe this enquiry within the Warburgian understanding of cultural history, *Kulturgeschichte* and *Kulturwissenschaft*, as a very broad field with room for art, the sciences and religion to be studied in their interplay and interactions. I should like to note here that as part of the preparation of this work, I conducted a preliminary survey of ancient and medieval iconography related to the alphabet and other aspects of my theme. The reader will be acquainted in the following pages with some of the fruits of this survey, but I would expect, and it is a promising desideratum, that a thoroughly conducted iconographical enquiry shall bring to light many more works of interest and relevance to the subject at hand.

A. The Concept

Any dictionary of Ancient Greek will give two main meanings for the word στοιχεῖον, that of 'letter' and that of 'element'; κδ΄ στοιχεῖα means 'the 24 letters', but δ΄ στοιχεῖα means 'the four elements'. In addition to this grammato-physical duality, letters were used from the sixth century BC and down to the High Middle Ages to represent numbers: Greek, Hebrew and Arabic alphabets were used in very similar ways for all sorts of arithmetical purposes, from everyday calculations to advanced mathematics. The joint usage of the same notation by language and numbers allowed naturally for

[3] A. Warburg, 'Italienische Kunst und internazionale Astrologie im Palazzo Schifanoja zu Ferrara', in *Gesammelte Schriften: Die Erneuerung der Heidnischen Antike* (Leipzig/Berlin: Teubner, 1932), 479.

certain practices halfway between linguistics and mathematics which are quite alien to our contemporary experience of 'number' and which I think can be accurately called *alphanumeric*. These practices were rooted in a subtly different perception of the boundaries between letters and numbers, and this is why this work is also an attempt at 'a wider semiotics of writing'[4] in which the alphabet is considered not just a graphic device, but a very tight-knit integration of phonetic, graphic and numerical values[5] which when combined determine the extent of its applications in other fields. This is also why this work is concerned with grammar as much as with arithmetic, and with phonetics and prosody as much as with calligraphy, in a synthesis that may be best characterised as 'alphanumeric cosmology.'[6]

B. Overview

The examination of this triune concept of letter-number-element, and its elaboration in ancient and medieval scholarship will be the object of the book chapters. It is a work in two phases and nine chapters which follow rather loosely historical chronology: first a defining phase, specific, descriptive and idiographic (Part I), restricted mostly to the Graeco-Latin tradition, and then a comparative phase, illustrative, synthetic and cosmopolitan (Parts II and III).

Part I establishes the object of my research in all its dimensions: Chapter 1 is the most textual based of the book. It is devoted to the grammatical aspect, and it runs mostly as a series of glosses to passages from philosophers and to the commentaries on the grammar primer attributed to Dionysius Thrax. Chapter 2 deals with the arithmetical aspects, with a special emphasis on the Pythagorean tradition, and in

---

[4] D. K. Psychoyos, 'The Forgotten Art of Isopsephy and the Magic Number KZ', *Semiotica* 2005, nos. 154-1/4 (2005): 209.

[5] Cf. J. Lougovaya, 'A Perfect Pangram: A Reconsideration of the Evidence', *Greek, Roman, and Byzantine Studies* 57, no. 1 (2017): 186.

[6] Other denominations used in very closely related works include 'letter mysticism', 'numerology', 'lettrism', 'Ḥurufism'. Even though some are lexically simpler to use, they have the disadvantage of being one sided or culturally and historically charged. Of course, new and descriptive compounds are possible, like 'alphanumerism', or reclaiming the rare 'stichology', but I would not like to be responsible for proliferating neologisms.

particular on the fragments attributed to Philolaus and on the *Introduction to Arithmetic* by Nicomachus of Gerasa.

Part II includes four chapters, mining the scriptural traditions of late Hellenistic and early medieval periods, incorporating the views of evolving, growing and nascent Abrahamic religions. Chapter 3 studies Jewish Biblical and Rabbinic texts, and Chapter 4 does the same with early Christian sources. Chapter 5 tries to deal in unitary fashion with the very heterogeneous body of late Hellenistic Hermetic, Gnostic and magic texts, and Chapter 6 looks at the Qur'ānic and related Islamic exegetical literature.

Part III, in three chapters, explores some specific cases of Abrahamic alphanumeric cosmology in a dually understood 'theurgic' dimension: as the creative act of the world-making deity, and as the divinely oriented work of man; hence this part includes texts more closely related to cosmogony, liturgy, magic, and alchemy. Chapter 7 focuses on the basic structure and concepts of the above-mentioned *Sefer Yetsirah*; Chapter 8 looks at certain Celtic and Scholastic Christian practices and doctrines; and finally Chapter 9 follows the alphanumeric elements through major Islamic philosophical texts, including the *Epistles of the Brethren of Purity* and some texts by Muḥyī al-Dīn ibn ʿArabī.

The time span covered by the research is given, roughly, by the two ends of what I suggest we may call the 'alphanumeric age,' between the late sixth century BC, when numerals and letters first coalesced in the Greek Milesian system, and the twelfth century AD, when the introduction of the Indo-Arabic numerals around the Mediterranean was becoming generalised and letters and numbers ceased to have a single 'body.' This will be discussed in some more detail in the final Conclusion.

C. Survey of Scholarship

Aside from excellent specialised works on Jewish, Islamic and Hermetic alphanumeric cosmology, there is a remarkable dearth of English-language literature on this topic in general. There are two major contributions, both originally in German and never translated into English. The one closest to my research, though second in chronological order, is Franz Dornseiff's 1922 monograph, *Das Alphabet in Mystik und*

Magie.[7] Dornseiff himself expresses in his introduction the desirable opening towards more Eastern sources than he could include. I hope that this book will at least in some ways be a contribution towards fulfilling his wish, as it is also an updating of sources regarding these topics of alphanumeric symbolism and alphanumeric speculation broadly speaking. The second major landmark is Hermann Diels' *Elementum*,[8] a comprehensive historical lexicological work, tracing the history of the words στοιχεῖον and *elementum* in great detail, and of the many variations of the 'letter simile' (*Buchstabengleichnis*) and the 'lettercase simile' (*Schriftkastenbild*, assuming a set of moveable printing types).

Dornseiff's work became an undisputed reference work for the subject and had no direct continuators, while Diels' prompted several kinds of partial refutations and additions on different fronts. Lagercranz (1911),[9] Vollgraff (1949),[10] Koller (1955),[11] Burkert (1959),[12] and Schwabe (1980)[13] were explicitly in dialogue with Diels mostly about the Greek term, while Rogge (1923),[14] Sittig (1952),[15] and Coogan (1974)[16] focused on *elementum*.

---

[7] F. Dornseiff, *Das Alphabet in Mystik und Magie*, Stoicheia, Studien zur Geschichte des antiken Weltbildes und der griechischen Wissenschaft 7 (Leipzig: B.G. Teubner, 1922). Notably, the original publication belonged to a series called '*Stoicheia*: Studies for the History of Ancient Worldview and of Greek Scholarship.'

[8] H. Diels, *Elementum: eine Vorarbeit zum griechischen und lateinischen Thesaurus* (Leipzig: B. G. Teubner Verlag, 1899).

[9] O. Lagercrantz, *Elementum: eine lexikologische Studie, I*, vol. 1 (Akademiska bokhandeln, 1911).

[10] W. Vollgraff, 'Elementum', *Mnemosyne* 2, no. 2 (1949): 89–115.

[11] H. Koller, 'Stoicheion', *Glotta* 3./4. No. 34 (1955): 161–174.

[12] W. Burkert, 'ΣΤΟΙΧΕΙΟΝ: Eine semasiologische Studie', *Philologus: Zeitschrift für antike Literatur und ihre Rezeption* 103 (1959): 167–197.

[13] W. Schwabe, *'Mischung' und 'Element' im griechischen bis Platon: Wort- und begriffsgeschichtliche Untersuchungen, insbesondere zur Bedeutungsentwicklung von Stoicheion* (Bouvier Verlag H. Grundmann, 1980).

[14] C. Rogge, 'Nochmals lat. elementum', *Zeitschrift für vergleichende Sprachforschung auf dem Gebiete der Indogermanischen Sprachen* 51, no. 1 (1923): 154–158.

[15] E. Sittig, 'Abecedarium und elementum', in *Satura: Früchte aus der antiken Welt*, by O. Weinreich (Baden-Baden: Verlag für Kunst und Wissenschaft, 1952), 131–138.

[16] M. D. Coogan, 'Alphabets and Elements', *Bulletin of the American Schools of Oriental Research*, no. 216 (1974): 61–63.

Lumpe (1962)[17] gives a brief account summarising much of Diels from the perspective of conceptual history. Balázs (1965),[18] barely cited elsewhere, gives what I consider an important insight into the metric and prosodic associations of the Greek. Druart (1968)[19] has examined very carefully the use and scope of στοιχεῖον in Plato's works, complemented by the more recent work by Laspia, who gives a very useful summary of the *status questionis*.[20] I should also mention here an important recent work by Weiss[21] which takes Dornseiff as starting point, and a very stimulating new Heraclitean contribution by Lebedev, which should inform every new account of the story of the term.[22]

Drawing variously from the above, the following have elaborated more on aspects of the concept itself and less on the philological aspect. Ryle (1960)[23] deals with logic and the Platonic theory of forms; Lohmann (1980)[24] with mathematical related terms; Vogt-Spira (1991)[25] studies the phonetic-written duality, and Crowley (2005)[26] treats specifically

---

[17] A. Lumpe, 'Der Begriff "Element" im Altertum', *Archiv für Begriffsgeschichte* 7 (1962): 285–293.

[18] J. Balázs, 'The forerunners of structural prosodic analysis and phonemics', *Acta Linguistica Hungarica* (Budapest) 15, nos. 1–2 (1965): 229–86.

[19] T.-A. Druart, 'La Notion de « stoicheïon » dans le « Théétète » de Platon', *Revue Philosophique de Louvain* 66, no. 91 (1968): 420–434.

[20] P. Laspia, 'L'excursus fonologico del Teeteto e la testualità platonica. A cosa pensiamo quando parliamo di 'elementi' e 'sillabe'?', in *Platone e la teoria del sogno nel Teeteto. Atti del Convegno internazionale Palermo*, ed. G. Mazzarra and V. Napoli (Sankt Augustin: Academia Verlag, 2008), 188.

[21] T. Weiss, אותיות שנבראו בהן שמיים וארץ *(Letters by which Heaven and Earth Were Created)* (Jerusalem: Bialik Press, 2014). A comprehensive English work by the same author was published as I completed my research, T. Weiss, *'Sefer Yeṣirah' and Its Contexts: Other Jewish Voices* (Philadelphia: University of Pennsylvania Press, 2018).

[22] A. Lebedev, 'The Metaphor of *Liber Naturae* and the Alphabet Analogy in Heraclitus' Logos Fragments', in *Heraklit im Kontext*, ed. E. Fantino et al., Studia Praesocratica 8 (Walter de Gruyter, 2017), esp. 251-253.

[23] G. Ryle, 'Letters and syllables in Plato', *The Philosophical Review*, no. 69 (1960): 431–451.

[24] J. Lohmann, 'Mathematik und Grammatik', *Beiträge zur Einheit von Bildung und Sprache im geistigen Sein. Festschrift zum* 80 (1980): 301–313.

[25] G. Vogt-Spira, '*Vox* und *Littera*: Der Buchstabe zwischen Mündlichkeit und Schriftlichkeit in der grammatischen Tradition', *Poetica* 23, nos. 3/4 (1991): 295–327.

[26] T. J. Crowley, 'On the Use of *Stoicheion* in the Sense of "Element"', *Oxford Studies in Ancient Philosophy*, no. XXIX (Winter 2005): 367–394.

Aristotle's usage. Among encyclopedic articles, I have found Kittel's[27] and Blössner's[28] particularly orientating.

My primary intention in this new research on an old theme is to go back to the original texts and to expand the range of texts examined; in particular to study the semantic analogies found in Hebrew and Arabic, which with Greek and Latin constitute the main scholarly languages of the Mediterranean Middle Ages. This expansion of the field of vision is of course made possible by profiting from the insights of all the above scholars.

As may be surmised, given such precedents, this work pertains initially to philology or historical linguistics, and more specifically to lexicology, since it begins with the study of one word in one particular language, but the reader will quickly notice that στοιχεῖον was not the real object of my study, but merely one of the names of my object of study, and it was valuable only because of its synthetic semantic power, and due to its place in the history of Greek philosophy. Because this is in fact the study of a polysemy, the words themselves, στοιχεῖον or *elementum* or *sefirah* or *ḥarf*, are only important as facets of the 'jewel' (Ar. *jawhar*, jewel = essence, οὐσία), or as gateways into the fullness of the concept. By studying the words, we see more clearly the aspects of the concept, which in turn allows us to identify other terms used for one or other aspect of the same root concept, in what is already part of a semantic enquiry, the history of an idea, or a dogged exercise in *Begriffsgeschichte*.

D. Methodology Matters

Methodologically speaking, harking back to Ernst Robert Curtius, my starting point is then from 'the scientific technique which is the foundation of all historical investigation: philology,' not however with philology as an end in itself,[29] but more specifically, in the line of one of my basic

---

[27] *Theological Dictionary of the New Testament*, ed. G. Kittel, G. Friedrich and G. W. Bromiley, 7 vols. (Grand Rapids, Mich.: W.B. Eerdmans, 1985), s.v. στοιχεῖον (hereafter cited as TDNT).

[28] N. Blössner, 'Stoicheion', *Historisches Wörterbuch der Philosophie* (Basel), 1998.

[29] E. R. Curtius, *European Literature and the Latin Middle Ages*, Bollingen Series 36 (Princeton University Press, 2013), 42.

references,[30] assembling a diachronic semasiological study – exploring the etymologies from the first historical occurrences of the concept, and following from then onwards the shifts in meaning.

This alternating approach between word and concept is perhaps what Gadamer means when explaining, 'what conceptual history can do is to travel the way from word to concept and back again, keeping the path clear,' for ultimately, 'just as music is inconceivable without overtones, the conceptual language of philosophy is only entitled to opinions by the concord of its overtones, which restore the vague, abstracted field of a given concept to the natural power at its origin.'[31] It is precisely this travelling to and fro (a μέθοδος proper) between concept and terms that I intend to pursue, keeping the questioning open and paying attention to the conceptual overtones.

Thinking of 'keeping the questioning open,' I also agree heartily with Gadamer's observation that 'the purpose of enquiry in conceptual history can hardly be that of achieving a clearcut historical elucidation […] but it should rather be the case that through the enquiry are ascertained the limitations of such elucidation.'[32] This in fact brings to mind the following words addressed by Ernst Cassirer to Warburg in 1926 referring to the Kulturbibliothek:

> May the organon of intellectual-historical studies which you have created continue to ask us questions for a long time.[33]

Regarding the cultural-historical aspects that at once frame and are determined by the concepts studied, I have tried to focus on the continuity and comparability of the philosophical tradition, striving for the 'intuitive perception of an essence' instead of trying to ascertain 'genetic causes, currents, influences.'[34] Inasmuch as the concept of philosophy that I

---

[30] Burkert, 'ΣΤΟΙΧΕΙΟΝ'.

[31] H.-G. Gadamer, *Die Begriffsgeschichte und die Sprache der Philosophie*, Arbeitsgemeinschaft für Forschung des Landes Nordrhein-Westfalen: Geisteswissenschaften 170 (Wiesbaden: Springer Fachmedien, 1971), 18.

[32] *Ibid.*, 13.

[33] E. Cassirer, *The Individual and the Cosmos in Renaissance Philosophy*, trans. M. Domandi (University of Chicago Press, 2010), xiii.

[34] H. Corbin, *The Concept of Comparative Philosophy* (Ipswich: Golgonooza Press, 1981), 2.

am obliged to take as my departing point here is 'the multifaith and plurilinguistic thread of medieval philosophy,'[35] this is also a work on comparative religion, or at least on comparative theology and mysticism, since alphanumeric cosmology falls neatly within their ken.

In view of the philological starting point, that aims at drawing as much knowledge as possible from a single polysemy, and in view of the nature of the deeply entwined and interdependent medieval civilisations,[36] my approach to the comparative method is a carefully balanced exercise in *untranslatability*. I shall try to 'observe the flexibility of a religious pattern' as it is 'adopted and transformed across a wide range of chronological, linguistic, and religious boundaries.'[37] The basic idea was expressed by Humboldt: 'different languages are not so many designations of a thing: they are different perspectives on that same thing.'[38] This means that in each language, most words do not simply denote a reality, but rather express a synthesis of related meanings.[39] A fitting illustration is that of a jigsaw puzzle piece. Every language would be a different cut of the underlying picture of reality, and so, even though the final image is always the same, the pieces/concepts of each puzzle/language tessellate in different ways. 'Concepts are more than words, but how they fit between words, discourses, languages and vocabulary is an unresolved issue.'[40] I shall be comparing the many words from Greek, Latin, Hebrew and Arabic sources with the sole aim of revealing the underlying unitary concept that manifests in so many varied ways. In doing so, I expect I will not be too far from the guidelines (*Arbeitsregeln*) laid out by Reichardt for the discipline

---

[35] J. Marenbon, 'Mauro Zonta and the Unity of Medieval Philosophy', *Mediterranea. International Journal on the Transfer of Knowledge* 3 (2018): See.

[36] See R. Wisnovsky et al., eds., *Vehicles of Transmission, Translation, and Transformation in Medieval Textual Culture*, vol. 4, Cursor mundi (Turnhout: Brepols, 2011), 1–2.

[37] *Ibid.*, 22.

[38] Cited in B. Cassin et al., *Dictionary of Untranslatables: A Philosophical Lexicon*, Translation/Transnation (Princeton University Press, 2014), xix.

[39] A remarkable early precedent for this awareness is found in the Jain logical principle and religious doctrine of 'non-one-sidedness', *anekāntavāda*, or multiplicity of viewpoints (*Concise Oxford Dictionary of the World Religions*, s.v.).

[40] M. van Gelderen, 'Between Cambridge and Heidelberg. Concepts, Languages and Images in Intellectual History', in *History of Concepts: Comparative Perspectives* (Amsterdam University Press, 1998), 233.

of conceptual history,[41] when he considers that one of the primary tasks at hand is that of 'the reconstruction of conceptual fields' (*Begriffsfelder*).

Ultimately, it is my intention to expose, by unravelling the linguistic complexity, what Nietzsche called the *Geistergespräch*, the conversation of minds, as it unfurls through the centuries and cultural worlds from antiquity to the High Middle Ages, 'a conversation about fundamental human questions going on between authors ancient and modern.'[42]

The advised reader will note that the whole work tends towards music and practically calls for it at every turn. At this extreme point of my compilation, as I try to sum up and reconsider the entire project, I silently ponder the influence of the many hours of J. S. Bach that I listened to during the writing of this book, in particular the Goldberg Variations. Indeed, the greatest personal benefit I may have reaped from this research work has been a remarkable sensitization to music (the *musica elementorum*, perhaps), as welcome as unexpected in its ways and its reach. It is my sincere wish that the reader will be able to attune to this strong musical undercurrent of my work.

---

[41] See Gelderen, 'Between Cambridge and Heidelberg', 232–3.

[42] R. Goulbourne, 'Conversations with the Dead in Early Modern France', *The Modern Language Review* 108, no. 1 (January 2013): 95.

Part I

Defining the Concept

Introduction to Part I

This first part, tracing the foundation of the research, is mainly based on two texts chosen in the first place because of their seminal historical importance: one section of Aristotle's *Metaphysics*, and one section of Dionysius Thrax's *Art of Grammar* (Τέχνη γραμματική). Both these main sources are read carefully and considered in the light of their commentary traditions, while later in the book I consider some of their translations into Semitic languages.

Chapter 1

Notes on Early Alphabetic Cosmology

A. Starting from Aristotle's 'Lexicon'

The *locus classicus* for the semantic speculation on στοιχεῖον, and effectively the first historical account of the use of the term, is the definition given in book Δ or the 'Lexicon' of Aristotle's *Metaphysics*,[1] a book of central importance for ancient and medieval commentators of Aristotle.[2] I will now go in detail through the various parts of this definition, following the precedent of Diels, whose comprehensive history of the word in Greek and Latin is still the basic indispensable reference.[3]

As I go through each section of what is really a collection of five complementing definitions, I will start taking note of the properties of the στοιχεῖον as they crop up. A list of such properties will be of the greatest usefulness for the comparative phase of this research in order to recognise the same concept in different contexts and languages. As a visual aid, I shall henceforth use this sign ℙ on the margin to indicate the occurrences of the properties, which will be then listed together at the end. Without willing to jump ahead, I would like to note that most of the meanings that may seem to be strained out of these lines have been actually brought out over the centuries in the translations of στοιχεῖον into Latin and the Semitic languages.

1 στοιχεῖον λέγεται ἐξ οὗ σύγκειται πρώτου **ἐνυπάρχοντος** ἀδιαιρέτου τῷ εἴδει [εἰς ἕτερον εἶδος], οἷον φωνῆς στοιχεῖα ἐξ ὧν

'Element' means a primary *immanent* component, formally indivisible into another form. The elements of an utterance, for example, are the component parts of that

[1] 1014a26.

[2] Y. Halper, 'Averroes on Metaphysical Terminology: An Analysis and Critical Edition of the Long Commentary on Aristotle's Metaphysics Δ' (PhD diss., Dept of Philosophy, Bar-Ilan University, 2010), 9.

[3] Diels, *Elementum*.

σύγκειται ἡ φωνὴ καὶ εἰς ἃ διαιρεῖται ἔσχατα, ἐκεῖνα δὲ μηκέτ' εἰς ἄλλας φωνὰς ἑτέρας τῷ εἴδει αὐτῶν, ἀλλὰ κἂν διαιρῆται, τὰ μόρια ὁμοειδῆ, οἷον ὕδατος τὸ μόριον ὕδωρ, ἀλλ' οὐ τῆς συλλαβῆς.

utterance into which it is ultimately divisible, and which are not further divisible into other phonemes formally different from themselves. If an element is divided, the parts are formally the same as the whole: e.g., a part of water is water; but it is not so for the syllable.[4]

In this first definition, several adjectives are predicated of στοιχεῖον, but the basic initial description is ἐξ οὗ σύγκειται, 'from which there is composition,' so the first property we have is that στοιχεῖον is a *component*,
ℙ a constituent like a piece of a puzzle. Elements are systemic; they do not exist in isolation.

ℙ Next, πρώτον is used: elements are 'first things', they are *primordial*. There is in this some overlap with the word ἀρχή, which implies *origin*
ℙ and *precedence*, that is a *cosmogonic* or generative, and a logical *causal*
ℙ meaning. The elements are origins and causes, and this is related to the next property.

A fine point made in the definition is the use of ἐνυπάρχον to
ℙ characterise στοιχεῖον as a distinctly '*immanent*' principle. In apparent contrast to ἀρχή or αἰτία, στοιχεῖον is 'consubstantial' to entities, not only underlying them, but also – to elaborate on the etymology of ἐνυπάρχω – *in-under*-lying and determining them from within themselves. It should be noted, however, that the distinction between στοιχεῖον and ἀρχή, far from being clear, has a long history and is rather undecided in the Aristotelian corpus,[5] as shown for instance in *De gen. et corr.*, 329a5:

Ὅτι μὲν οὖν τὰ πρῶτα ἀρχὰς καὶ στοιχεῖα καλῶς ἔχει λέγειν, ἔστω συνομολογούμενον.

Let it now be agreed that it is right to call the primary beings 'principles' and 'elements'.

The next attribute of στοιχεῖον found in the first definition is ἀδιαίρετος

---

[4] Emphasis mine. Cf. the translation and comments in Crowley, 'On the Use of Stoicheion'.

[5] About the complications arising from Aristotle's presumed attempt at a unified elemental theory, see M. Kurdzialek, 'Elementum – Die Deutung der aristotelischen Definition des στοιχείου durch David von Dinant', in *Sprache und Erkenntnis im Mittelalter. Akten des VI. Internationalen Kongresses für mittelalterliche Philosophie*, Miscellanea Mediaevalia, 13/2 (Berlin, New York, 1981), 580–584.

τῷ εἴδει, 'indivisible in form'.[6] This means that the elements are *simple*, uncompounded, and Alexander of Aphrodisias clarifies in his commentary ℙ (354.26ff): οὐ γὰρ κατὰ τὸ ποσὸν, *not as regards quantity*. The addition of τῷ εἴδει, 'regarding the form' or 'essentially', reinforces the ambiguous initial πρώτον, like τὰ πρῶτα in the above quotation from *De gen. et corr.*, in that it has the effect of leaving the 'materiality' of the elements *undecided*. Τὰ πρῶτα can refer to bodies just as well as to some ℙ indeterminate manner of being. This subtlety did not escape Alexander, who contrasts it with the following paragraph of the definition, as I shall do now.

2 ὁμοίως δὲ καὶ τὰ τῶν σωμάτων στοιχεῖα λέγουσιν οἱ λέγοντες εἰς ἃ διαιρεῖται τὰ σώματα ἔσχατα, ἐκεῖνα δὲ μηκέτ' εἰς ἄλλα εἴδει διαφέροντα: καὶ εἴτε ἓν εἴτε πλείω τὰ τοιαῦτα, ταῦτα στοιχεῖα λέγουσιν.

Similarly, those who speak of the 'elements' of bodies do so referring to the parts into which bodies are ultimately divisible, and which are not further divisible into other parts different in form. And whether they speak of one or more than one such, they call them 'elements'.

In this second definition the στοιχεῖα are unequivocally corporeal principles, and Alexander notes that this refers to the atomists or to Empedocles 'who had everything else generated by the four' (Ἐμπεδοκλέους τῶν τεσσάρων τἆλλα γεννῶντος). Thus, according to this, the elements are *corporeal* and their implicit *generative* power is made explicit by the verb ℙ γεννῶ of the commentary.

3 παραπλησίως δὲ καὶ τὰ τῶν διαγραμμάτων στοιχεῖα λέγεται, καὶ ὅλως τὰ τῶν ἀποδείξεων: αἱ γὰρ πρῶται ἀποδείξεις καὶ ἐν πλείοσιν ἀποδείξεσιν ἐνυπάρχουσαι, [1014b] αὗται στοιχεῖα τῶν ἀποδείξεων λέγονται: εἰσὶ δὲ τοιοῦτοι συλλογισμοὶ οἱ πρῶτοι ἐκ τῶν τριῶν δι' ἑνὸς μέσου.

The term is applied with a very similar meaning to the 'elements' of geometrical propositions, and generally those of demonstrations; for the first demonstrations which underlie the many other ensuing demonstrations [1014b] are called 'elements' of demonstrations. Such are the primary syllogisms consisting of three terms with one middle term.

This meaning of στοιχεῖα as the principles or axioms of geometrical demonstrations (διαγράμματα), is precisely the meaning of the word in the

---

[6] The appendage εἰς ἕτερον εἶδος has been convincingly shown to be 'a misguided later addition' in M. E. Kotwick, *Alexander of Aphrodisias and the Text of Aristotle's Metaphysics* (California Classical Studies, 2016), 72–4.

title of Euclid's famous work. According to this definition, the elements are
ℙ *axiomatic* and *fundamental*, just as the geometric axioms which underlie and buttress Euclid's edifice. Burkert[7] observes that for Menaechmus, στοιχεῖα here refers to the postulates, and this is for him the meaning of Euclid's title.

It may be observed that these meanings are already contained *in nuce* in the verb ἐνυπάρχω we had encountered, and that the various definitions would seem to develop and amplify a few basic notions. This is precisely Crowley's point in rejecting 'the common assumption that the use of the term *stoicheion* in physical, metaphysical, or more generally cosmological contexts, in the general sense of principle of body, is a metaphorical derivation from some other use of *stoicheion*.'[8]

It is also made clear, especially by the mention of the primary
ℙ syllogisms, that the elements are *organic* or interdependent, and *integral*
ℙ in the sense of necessary to make a whole complete. Referring to this definition, Burkert[9] explains they are 'mathematical formulations which complement each other in order to perfect a system and which are logically inherent in each other.' In the *Poetica*, Aristotle illustrates this clearly: στοιχεῖον μὲν ἐστιν φωνὴ ἀδιαίρετος, οὐ πᾶσα δὲ ἀλλ᾽ ἐξ ἧς πέφυκε συνθετὴ γίγνεσθαι φωνή, 'στοιχεῖον is an indivisible utterance; not just any, though, but the one upon whose combination arises a composite utterance.'[10] Though never so explicit in Greek grammatical tradition, this is the quality eventually called *articulatio* in Latin grammar, upon the translation of συνθετὴ φωνή as *vox articulata*.[11]

4 καὶ μεταφέροντες δὲ στοιχεῖον καλοῦσιν ἐντεῦθεν ὃ ἂν ἓν ὂν καὶ μικρὸν ἐπὶ πολλὰ ᾖ χρήσιμον, διὸ καὶ τὸ μικρὸν καὶ ἁπλοῦν καὶ ἀδιαίρετον στοιχεῖον λέγεται. ὅθεν ἐλήλυθε τὰ

Following from the above, the term 'element' is also applied metaphorically to any small unity which is amply serviceable; and so that which is small and simple and indivisible is called an 'element.' Hence it comes about that the most universal things are ele-

---

[7] Burkert, 'ΣΤΟΙΧΕΙΟΝ', 191–92.

[8] Crowley, 'On the Use of Stoicheion', 369.

[9] Burkert, 'ΣΤΟΙΧΕΙΟΝ', 192.

[10] 1456b22, cited in Vogt-Spira, '*Vox* und *Littera*', 305.

[11] Cf. the reference to Boethius in U. Eco et al., 'On Animal Language in the Medieval Classification of Signs', in *On the Medieval Theory of Signs*, Foundations of Semiotics 21 (Amsterdam: John Benjamins B.V., 1989), 28–9, 32.

μάλιστα καθόλου στοιχεῖα εἶναι, ὅτι ἕκαστον αὐτῶν ἓν ὂν καὶ ἁπλοῦν ἐν πολλοῖς ὑπάρχει ἢ πᾶσιν ἢ ὅτι πλείστοις, καὶ τὸ ἓν καὶ τὴν στιγμὴν ἀρχὰς <καὶ στοιχεῖά> τισι δοκεῖν εἶναι.

ments; because each of them, being a unity and uncompounded, underlies many things – everything rather, or very many things. And so it is that also the unity and the geometrical point are seen by some as first principles <and elements>.

From this definition we retain two complementary attributes: the elements are small, or rather *minuscule* (Alexander: ἐλάχιστα πάντῃ) like the geometric point, and they are universal, most-encompassing or *pervasive*. ℙ Like the geometric point, in spite of being dimension-less, they are ℙ boundlessly present. They are also very interestingly called ἐπὶ πολλὰ χρήσιμον, i.e. useful and used in many ways, and reliable; one could say *operative* and *helpful*. They are like reliable tools, which brings to mind ℙ how, according to Hebrew lore, 'The Holy One, praised be He, said, "I need workers." And the Torah said to Him, "Let me provide you with twenty-two workers, the twenty-two letters which are in the Torah."'[12]

Something else to note in this definition is how the last line equates ἀρχαί and στοιχεῖα. In fact, most manuscripts only have ἀρχὰς here, but Alexander has the addition καὶ στοιχεῖα which I have reproduced. As we have seen above, the difference between the two words is rather blurred in Aristotle. Only a few paragraphs before these lines, in 1013b20, the definition of ἀρχή makes of it a genre including φύσις, στοιχεῖον, διάνοια, προαίρεσις, οὐσία and τὸ οὗ ἕνεκα !

5 ἐπεὶ οὖν τὰ καλούμενα γένη καθόλου καὶ ἀδιαίρετα (οὐ γὰρ ἔστι λόγος αὐτῶν), στοιχεῖα τὰ γένη λέγουσί τινες, καὶ μᾶλλον ἢ τὴν διαφορὰν ὅτι καθόλου μᾶλλον τὸ γένος: ᾧ μὲν γὰρ ἡ διαφορὰ ὑπάρχει, καὶ τὸ γένος ἀκολουθεῖ, ᾧ δὲ τὸ γένος, οὐ παντὶ ἡ διαφορά. ἁπάντων δὲ κοινὸν τὸ εἶναι στοιχεῖον ἑκάστου τὸ πρῶτον ἐνυπάρχον ἑκάστῳ.

Now, since what are called genera are universal and indivisible (there being no account of them), some people call the genera 'elements', and these rather than the *differentiae*, because the genus is more universal. For wherever the *differentia* is underlying, the genus also follows; but the *differentia* is not always where the genus is. What is then common to all cases is that the 'element' of every thing is that which is primary and inherent in it.

---

[12] Quoted in C. Bandt, *Traktat 'Vom Mysterium der Buchstaben': kritischer Text mit Einführung, Übersetzung und Anmerkungen*, Texte und Untersuchungen 162 (Berlin: Walter de Gruyter, 2007), 73, from the Midrash *Tanḥuma Yelammedenu*.

ℙ With this final genus simile the elements are characterized first as ἄλογα, ‘unaccountable’, ‘*indefinable*’, ‘unexplainable’, simply ‘countless’, or perhaps ‘irrational’ in the mathematical sense, which is a synonym of ‘incommensurable’;[13] then secondly, in their function of genera, they are characterized as categorial or generific, as if each ‘element’ were a
ℙ *genarch*, something made very explicit in acrostic compositions, where every στοιχεῖον begins and determines a verse or a section of the text. It is in this combined sense that Kahn speaks of ‘categorial genera, the final answer to the *What-is-it?* question for an item within each category’.[14]

I have dissected at length the above lines not only because they summarise for the first time in history the various meanings of our concept, but also because they contain much that will eventually inform every discussion on the topic across cultures and centuries. And because of this, they will be of use to us as a touchstone when moving forward through the more general and specialised literature.

I. First Glimmerings

If we step back from Aristotle now, to examine the origins of the passage just analyzed, two strands are immediately discernible, 1) the word στοιχεῖον itself, and 2) the concept which eventually would be *par excellence* expressed by this term. These two strands of enquiry have to do with the etymology and the semantics.

1. Etymology

The first occurrence of a related root in Greek literature comes from *Iliad* 23, where in verses 358 and 757 the chariot racers are said to stand μεταστοιχί, explained by the scholiast as ἐπὶ στοῖχον, ἐπὶ τάξιν, ‘in a row’, ‘in order’.[15] One of the main aims of Burkert’s article was precisely to ‘establish the root στοῖχος conclusively, through the widest possible

---

[13] Famously in a letter simile in *Theaetetus* 202b3, τὰ μὲν στοιχεῖα ἄλογα καὶ ἄγνωστα εἶναι, αἰσθητὰ δέ, ‘the στοιχεῖα are not rational or knowable, but they are perceptible.’

[14] C. H. Kahn, ‘Questions and Categories’, in *Questions*, ed. H. Hiż (Dordrecht: Springer, 1978), 251–2.

[15] *Scholia in Iliadem (scholia recentiora Theodori Meliteniotis, e cod. Genevensi gr. 44)*, Repr. 1966, vol. 2, Les scolies genevoises de l’Iliade, ed. by J. Nicole (Geneva: Georg, 1891), 23.757.

sampling, as the semantic origin of στοιχεῖον.'[16] This characteristic of the στοιχεῖα is often mentioned in the grammatical literature, but it is not made quite explicit in the *Metaphysics* definition: they are *sequential*, gradual in ℙ the sense of Lat. *gradus*, a step, related to στείχω, to walk, and to στίχος, a line of verse, or a line in general.

The first ever use of the word itself seems to come from a third-hand report by Plutarch of the cosmology of the obscure Petron of Himera,[17] sometimes also identified to a 'sage from the Red Sea',[18] who posited the existence of 183 worlds (κόσμοι) arranged in the form of a triangle, with one at each vertex and sixty along each side, which are said to be next to each other and to κατὰ στοιχεῖον ἅπτεσθαι – which we could gloss as 'to cohere in orderly fashion', 'like an ABC.' A French translation gives 'ils se touchent les uns les autres par leurs éléments fondamentaux.'[19]

The reference to this extraordinary cosmology appears twice in Plutarch's dialogue.[20] Initially one of the characters presents it and adds: ἅπτεσθαι δὲ τοὺς ἐφεξῆς ἀλλήλων ἀτρέμα περιιόντας ὥσπερ ἐν χορείᾳ, 'they hang on to each other in a row, going round in circles, gently, as in a dance,' but a few lines down, the narrator, presumably Plutarch, comments that he himself does not know what to make of the κατὰ στοιχεῖον ἅπτεσθαι.[21] Now, János Balázs, who makes a strong case for the musical-rhythmical origin of στοιχεῖον, points out how Petron's 183 worlds are 'contiguous in a choric dance with one another.'[22] Balázs also points out that 'the verb στείχω meant not going in general, but procession

---

[16] Burkert, 'ΣΤΟΙΧΕΙΟΝ', 169.

[17] See Diels, *Elementum*, 62–3; Vollgraff, 'Elementum', 91ff. The uncertainty is directly related to the dating of Petron. Diels himself, presenting this as the earliest ever textual evidence, writes that 'he *seems* to appear in the sixth century BC' [my italics].

[18] See C. Macris, 'Pétrôn d'Himère', in *Dictionnaire des philosophes antiques*, ed. R. Goulet, vol. 5, 1 (Paris: CNRS éditions, 2012), 246–263, which is the best recent treatment and adds significant details to Petron's profile.

[19] Plutarch, 'Pourquoi les oracles ont cessé', in *Oeuvres morales de Plutarque*, trans. D. Ricard, vol. 2 (Paris: Lefévre, 1844), 328.

[20] At 422b3 and later 422d7.

[21] See H. Diels and W. Kranz, *Fragmente der Vorsokratiker*, 6th ed., Repr. 1966 (Berlin: Weidmann, 1951), 28 (hereafter cited as DK).

[22] Balázs, 'The forerunners', 233. This article seems to have escaped the notice of Burkert and others. See also, along similar lines, the more recent Laspia, 'L'excursus fonologico del Teeteto', 204.

in *well-ordered ranks*,' and he establishes associations with the Greek appreciation of dance as the all-encompassing artistic form. Perhaps we should further specify and instead of simply considering the elements to be
ℙ 'gradual', we might say they are choreutic, or even *dancey*. A similar usage in a cosmological context is found in *Sch. to De divinibus nom.* 256,22, «ἀλληλουχίαι δὲ τῶν ὁμοστοίχων» εἰσὶν αἱ τοῦ κόσμου **κατατάξεις** ἐκ μιᾶς οὐσίας τῆς ὕλης εἰς σώματα πληθυνθεῖσαι στερεωμάτων καὶ οἱονεὶ σειρὰ ἀλλήλων ἐχόμεναι, the 'interconnections of those who have the same element' are the *orders* of the universe, which from one essence are multiplied into solid bodies of the matter, and which hold to each other 'like links of a chain.'[23] Even further on the musical aspect, in later Greek alchemical literature, Stephanus of Byzantium would describe how 'Orpheus made melody with rhythmical sounds so that the symphony should re-echo the co-ordinated movement of the elements,' where the elements are called ὁμοταγεῖς οὐσίαι, the 'co-ordinated essences.'[24]

In any case, eschewing Petron as a dubiously dated testimony, if we are looking for a completely certain earliest testimony to the use of the word, we must also dismiss Anaximander[25] and other pre-Socratic authors whose *ipsissima verba* are not preserved,[26] and acknowledge that στοιχεῖον first occurs in Aristophanes's *Ecclesiazusae* (651), ὅταν ᾖ δεκάπουν τὸ στοιχεῖον, 'when the shadow of the gnomon is ten feet long.' And thus we can see how the earliest certain recorded meaning of στοιχεῖον has to do with gnomonics, referring to the shadow cast on the sundial, and by extension to the module of its advance.[27] This powerful image combines different meanings contained in the etymology: it is a walking shadow-line, and it walks in circles, determining events as it progresses.

---

[23] *Ioannis Scythopolitani prologus et scholia in Dionysii Areopagitae librum 'De divinis nominibus' cum additamentis interpretum aliorum*, vol. 4,1, Patristische Texte und Studien 62, ed. by B.R. Suchla (De Gruyter, 2011), 236; in spite of some common 'sociological' readings, the medieval commentaries agree in giving to ὁμόστοιχος here a physical sense.

[24] F. Sherwood Taylor, 'The Alchemical Works of Stephanos of Alexandria, part 2', *Ambix*, June 1938: 126–27.

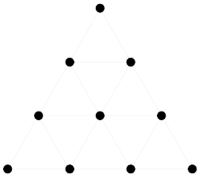
[25] See DK, 11ff.

[26] Cf. Druart, 'La Notion de « stoicheïon »', 422, 'si les textes doxographiques utilisent le mot stoicheïon, les citations probables des Présocratiques, elles, l'ignorent.'

[27] Cf. Vollgraff, 'Elementum', 102.

2. The Definition

As regards the concept itself, it is well known[28] that it was Empedocles who, following the Pythagorean predilection for the holy Tetractys, introduced the quaternary of the elements, calling them the 'roots of all things,' ῥιζώματα τῶν πάντων. He thus invented what would become the prevailing concept of 'element', without employing the name which would eventually be used for it, στοιχεῖα. He characterizes them as 'primordial and jointly originating,' πρῶθ' ἥλικά τ' ἀρχήν,[29] hence also the primal elements [*Urelemente*], from which are compounded the four visible elements of the current world order. Πρῶθ' ἥλικά τ' ἀρχήν could be alternatively rendered 'primordial and contemporary in origin,' to reveal an interesting new property of the elements: they are *coeval*, all coming to ℙ be at the same 'time', without question of precedence among them.



Another important basic quality of the elements made explicit above, recalling also the shadow of the gnomon, is their 'halfway' ontological status, being *intermediary* between the transcendent and the material. ℙ

Not even the atomists had decided on a term for their corpuscles, 'calling them alternatively εἴδεα, σχήματα, ἰδέαι, φύσεις, ναστά, ἄτομα, among others'.[30] Perhaps the most important gain from reading Diels's work is to realize that the word στοιχεῖον was originally not limited to the meaning of physical constituents of matter, but that there was, in the words of Burnet,[31] 'the ambiguity of the term "element."' The examples abound, and this is for instance why texts would appear like the Pseudo-Plutarch Τίνι διαφέρει ἀρχὴ καὶ στοιχεῖα, *What is the Difference between* ἀρχή *and* στοιχεῖα?[32]

---

[28] See Diels, *Elementum*, 15.

[29] Cf. DK, 21.B.38.

[30] Diels, *Elementum*, 16.

[31] J. Burnet, *Early Greek Philosophy*, 3rd ed. (London: A & C Black, 1920), 18.

[32] *Placita philosophorum* 875C, 4. Note the plural of στοιχεῖα in contrast to the singular of ἀρχὴ.

3. Atoms and Letters

The comparison to letters, if not a straightforward identification, seems to be a very early feature of the concept of στοιχεῖα in their 'atomic' aspect, as *naturale simplex corpus*.[33] Recent analysis of some of Heraclitus' fragments,[34] and recent approaches to some of the aspects of Democritean atomism,[35] make very possible a hitherto unexplored continuity of this image at the very onset of the Greek philosophical tradition, including a very conscious usage by Plato of an imagery which was already part of the common heritage.[36]

II. Platonic Corpus

It was already affirmed in ancient times that 'no one before Plato had used the term στοιχεῖον to refer to the physical principles'.[37] The classical reference is to Eudemus[38] and the present context warrants a good reading of it:

Πλάτων τά τε τῶν Πυθαγορείων καὶ τῶν Ἐλεατικῶν ἐπὶ τὸ σαφέστερον προαγαγὼν τά τε ὑπὲρ τὴν φύσιν ἐξ-ύμνησεν ἀξίως κἀν τοῖς φυσικοῖς καὶ γενητοῖς τὰς **στοιχειώδεις ἀρχὰς** τῶν ἄλλων διέκρινε καὶ στοιχεῖα πρῶτος αὐτὸς ὠνόμασε τὰς τοιαύτας ἀρχάς.	Clarifying greatly the doctrines of Pythagoreans and Eleatics, Plato composed worthy 'hymns' about the preternatural. He discerned the *elementary principles* in what is manifested and natural, and he was the first to call those principles 'elements'.

The expression στοιχειώδεις ἀρχὰς is noteworthy: 'those principles which are like στοιχεῖα.' According to this, clearly enough, the στοιχεῖα would be one species within the genus 'principles.' Unfortunately, the Platonic

---

[33] Remarkably, in our times, the young Karl Marx devoted one chapter of his doctoral dissertation to this issue, treating of the difference between ἄτομοι ἀρχαί and ἄτομα στοιχεῖα; see K. Marx, 'The Difference Between the Democritean and Epicurean Philosophy of Nature', in *Marx/Engels Collected Works, Vol. 1 (1835–1843)* (New York: International Publishers, 1975), 25–105.

[34] Lebedev, 'The Metaphor of *Liber Naturae*', esp. 234–246.

[35] See D. W. Graham, *The Texts of Early Greek Philosophy: the Complete Fragments and Selected Testimonies of the Major Presocratics*, 2 vols. (Cambridge University Press, 2010), 617.

[36] Lebedev, 'The Metaphor of *Liber Naturae*', 251–4.

[37] Eudemus of Rhodes, cited in Diels, *Elementum*, 17.

[38] Eudemus of Rhodes, *Fragmenta*, 2nd ed., ed. F. Wehrli, Die Schule des Aristoteles 8 (Basel: Schwabe, 1969), fr. 31. Cf. also the valuable observations in Crowley, 'On the Use of Stoicheion', 369–70.

corpus does not really warrant such a clear distinction. In fact, when comparing the rather motley use of στοιχεῖα across the Platonic corpus against the wealth of pre-Socratic metaphysical speculation, it seems more appropriate not to insist too much on any sort of a programmatic intention on the part of Plato, but rather to assent to the laborious conclusions of Crowley, 'The core sense of *stoicheion*, then, is that of a basic part of a whole,'[39] and in particular to the work by Thérèse-Anne Druart, who has devoted two meticulous articles to the 'Platonic *stoicheiology*' and the matter of the letter-simile, Diels' *Buchstabengleichnis*.[40] Her conclusions run along similar lines: 'la valeur paradigmatique de la « comparaison des lettres » a été source, elle aussi, d'une extension de la problématique par un dépassement du cadre proprement linguistique.'[41] And in her earlier article devoted to *Theaetetus*, 'Le passage incessant de composant matériel à constituant explicatif, nous révélerait alors que, par les *stoicheïa*, Platon entend, tend plus exactement à élaborer une notion de constituant, de *principe explicatif interne*.'[42]

Whatever the case, Plato's impact, which is reflected not only in Aristotle's definition above, but also in his own flexibility regarding the term,[43] opened the field for very broad subsequent developments. One case in point is Euclid, who came to be dubbed ὁ στοιχειωτής[44] and whose influence is prominent in later Neo-Platonic literature, both in mathematical and arithmological speculations.

III. The Constellations

Another major semantic development of the term, perhaps partly influenced by early Christian literature, and mostly by the lasting impact of the New Testament,[45] is the astronomical meaning of constellation, whence

---

[39] *Ibid.*, 392.

[40] T.-A. Druart, 'La Stoicheïologie de Platon', *Revue Philosophique de Louvain* 73, no. 18 (1975): 392, and Druart, 'La Notion de « stoicheïon »'.

[41] Druart, 'La Stoicheïologie', 261.

[42] Druart, 'La Notion de « stoicheïon »', 433.

[43] See Crowley, 'On the Use of Stoicheion', 370ff.

[44] Diels, *Elementum*, 26.

[45] See *ibid.*, 50ff.

zodiacal sign and eventually the astrological concept of ruler of a sign.[46] Variously conceived as 'elemental spirits,' or 'cosmic spirits' worshipped 'by Jews and Gentiles,' they had a bad connotation which according to Diels is ultimately at the origin of the late medieval and modern Greek στοιχείο for a demon, genie, ghost or bugbear.[47]

All this rich context makes it all the more impressive that the term became eventually so important in grammatical treatises, as I shall discuss in the next section. All the pre-Socratic doctrines and all the Platonic syntheses and the Aristotelian treatments of στοιχεῖα were bound to inform, even if indirectly, all succeeding scholarly appropriations of the term. Let us then step back somehow, or aside into the grammatical tradition, but not before a brief excursus to mention the Latin lexical and philosophical correspondences which I have hitherto left unmentioned.

IV. Latin Correspondences

The word *elementum* appears in Lucretius[48] and then in Cicero[49] with the two meanings of letter and element that στοιχεῖον had already developed in the Greek world by that time. It is a matter of debate how ontological or simply rhetorical Lucretius' usage of the letter image was,[50] but Cicero was one of the translators of *Timaeus*, and *elementum* appeared in other later authors partaking of the contemporary debates in Greek philosophy, which included Stoic atomistic and Middle Academy

---

[46] See Manetho, *Apotelesmatica*, 4, 624, οὐρανίων ἄστρων στοιχεῖα, D. L. 6, 102, τὰ δώδεκα στοιχεῖα, and cf. also 'Lexikon zur byzantinischen Gräzität', *s.v.* στοιχειωματικός, 'belonging to the horoscope.' I feel quite convinced that Apuleius' famous *Per omnia vectus elementa* is also an Egyptian-related occurrence of this same zodiacal meaning: the initiate travels through the entire zodiac on his 'return' voyage; cf. J. Bergman, '*Per omnia vectus elementa remeavi*. Réflexions sur l'arrière-plan égyptien du voyage de salut d'un myste isiaque', in *La soteriologia dei culti orientali nell'Impero Romano*, ed. U. Bianchi and M. Vermaseren (Brill, 1982), 671–708.

[47] See *Glossarium mediæ et infimæ graecitatis*, ed. C. D. F. Du Cange (Lyon: Jean Anisson, 1688), (reprint Collège de France, 1943), 1.1453.

[48] 'Five times in the first two books of the *De rerum natura* the arrangement of atoms in an object is compared to the arrangement of letters in a word'; see A. Dalzell, 'Language and atomic theory in Lucretius', *Hermathena*, no. 143 (1987): 19.

[49] *Academica*, I, 7, 26. See Diels, *Elementum*, , 69.

[50] See especially the reference to Friedländer in Dalzell, 'Language and atomic theory in Lucretius', 28n.

developments.[51] Interestingly, these first attestations show ready-made the identification between στοιχεῖον and ἄτομος, the 'physical' meaning which was never articulated as such in pre-Socratic literature in spite of being conceptually there. Examples from Horace, Ovid, Quintilian and other later grammarians abound. For Boethius (*De institutione arithmetica*, 2,48), the interval of fourth, being the basis of harmony, can be considered virtually an *elementum*.

Regarding the etymology of *elementum*, in spite of some elaborate, and at times very curious, hypotheses by Diels,[52] Sittig,[53] and others,[54] Burkert appears to be right in considering it a clear case of undecidability.[55]

B. Greek Grammarians

It might be said without exaggerating that the Greek grammatical tradition is all in one way or another related to Dionysius Thrax's Τέχνη γραμματική or *Ars grammatica*.[56] According to Uhlig, the editor of the still standard Teubner edition, 'no other book in the entire world of profane literature has been preserved of such a great impact, not only because this *techne* is the ancestor of all the grammars authored in Europe, but also because there is hardly any of them in which the traces of the original are totally obliterated.'[57] It must be noted that this appraisal is written very nearly two thousand years after the appearance of the treatise, and that it does not mention the definitive and lasting impact on Byzantine scholarship.

The Τέχνη is traditionally attributed to Dionysius (fl. 100 BC), a pupil of Aristarchus of Samothrace. If the attribution is to be trusted, this

---

[51] See Diels, *Elementum*, 68ff.

[52] *Ibid.*, 81ff.

[53] Sittig, 'Abecedarium'.

[54] S. B. Platner, 'Notes on Elementum', *The Classical Review* 8, no. 8 (1894): 344–345; Rogge, 'Nochmals lat. elementum'.

[55] Burkert, 'ΣΤΟΙΧΕΙΟΝ', 167.

[56] Dionysius Thrax, *Ars grammatica*, ed. G. Uhlig and A. Merx, Grammatici Graeci 1 (Leipzig: B. G. Teubner Verlag, 1883).

[57] *Ibid.*, vi. Regarding its influence on Syriac and other Semitic grammatical traditions, see D. King, 'Elements of the Syriac Grammatical Tradition as these Relate to the origins of Arabic grammar', in *The Foundations of Arabic Linguistics: Sībawayhi and Early Arabic Grammatical Theory*, ed. A. Marogy (Leiden, Boston: Brill, 2012).

little vademecum would be the only Hellenistic grammatical treatise to survive to our times, but Dionysius' authorship has been doubted and discussed since antiquity; some scholars maintain that the entire treatise is a compilation of the third or fourth century AD, others defend its complete authenticity, dating it to the end of the second century BC, and a third group of scholars argue for a middle position, allowing for some portions of the book to go back to Dionysius.[58]

Dionysius' Τέχνη, which is 'in essence a descriptive taxonomy of classical Greek phonology and morphology,'[59] is divided into twenty sections. Section 6, Περὶ στοιχείου ('About the *stoicheion*'), comprises forty lines of text, of which only the first five lines concern this enquiry. After them, the text explains the phonetic classification of the letters and the role some letters play on the nominal inflection. My objective in the following pages will be to survey the literature dedicated to these first five lines of section 6, which read:

Περὶ στοιχείου· γράμματά ἐστιν εἰκοσιτέσσαρα ἀπο τοῦ α μέχρι τοῦ ω. γράμματα δὲ λέγεται διὰ τὸ γραμμαῖς καὶ ξυσμαῖς τυποῦσθαι· γράψαι γὰρ τὸ ξῦσαι παρὰ τοῖς παλαιοῖς, ὡς καὶ παρ' Ὁμήρωι· «Νῦν δέ μ' ἐπιγράψας ταρσὸν ποδὸς εὔχεαι αὔτως». τὰ δὲ αὐτὰ καὶ στοιχεῖα καλεῖται διὰ τὸ ἔχειν στοῖχόν τινα καὶ τάξιν.

On the element – The letters [γράμματα] are twenty-four, from α to ω. They are called γράμματα because they are drawn with lines [γραμμαί] and scratches, since for the ancients drawing was like making scratches, as in the *Iliad*, 'Now, having but scratched my ankle with your arrow, you boast vainly.' These same letters are called 'elements' because they have a sort of gradation and order.[60]

This is the basic text. I will now present the relevant scholia and commentaries by topic, drawing mainly from Hilgard's rich collection,

---

[58] For a recent take on dating and attribution questions, see G. Ventrella, 'P. Yale 1.25 e la *Grammatica* di Dionisio Trace: la *Techne* 'ritrovata'?', *Glotta* 90, nos. 1-4 (2014): 241–268. E. Dickey, *Ancient Greek Scholarship: A Guide to Finding, Reading, and Understanding Scholia, Commentaries, Lexica, and Grammatical Treatises, from Their Beginnings to the Byzantine Period*, Classical Resources 7 (New York: Oxford University Press, 2007), 77 gives general information.

[59] R. H. Robins, *The Byzantine Grammarians: Their Place in History*, vol. 70, Trends in Linguistics: Studies and Monographs (Berlin/New York: Mouton de Gruyter, 1993), 41.

[60] Dionysius Thrax, *Dion. Thrax*, 6

which includes mostly undated material spanning at least ten centuries of exegesis,[61] and making use also of the works by Lallot[62] and Pecorella.[63]

I. The Opening Anacoluthon

A recurring topic in the scholia is 'the puzzling anacoluthon' between the heading Περὶ στοιχείου and the initial words γράμματά ἐστιν…

Ἀπορίαν τινὰ εὐθέως καὶ ζήτησιν ἔχει ἡ ἐπιγραφή, τίνος ἕνεκεν ἐπιγράψας «περὶ στοιχείου» οὐκ ἐπήγαγε «στοιχεῖόν ἐστιν» [...] Ταύτην οὖν τὴν ζήτησιν σὺν θεῷ εἰσόμεθα.

The heading presents us immediately with an impasse and demands an inquiry: why, after writing «περὶ στοιχείου», did he not follow with «στοιχεῖόν ἐστιν»? […] This is a matter we will only know with God's help.[64]

It goes without saying that this nomenclature problem is not just a quirk of the author, but an indication of the polysemy of the underlying concept. In any case, a little further down, a solution is offered:

Καὶ ἔστι μὲν εἰπεῖν, ὡς καὶ αὐτὸς μετ' ὀλίγον ἐρεῖ, ἐπειδὴ ταὐτόν ἐστι στοιχεῖον καὶ γράμμα· φησὶ γὰρ ὑποκατιὼν ὁ τεχνικός «τὰ δὲ αὐτὰ καὶ στοιχεῖα καλεῖται»· τὸ δὲ ἀληθές, ὅτι στοιχεῖον μέν ἐστιν ἡ ἐκφώνησις, γράμματα δὲ αἱ εἰκόνες καὶ οἱ χαρακτῆρες. Καὶ χαρακτῆρες μέν εἰσιν κδ΄, ἐκφωνήσεις δὲ πολλῷ πλείους

It can be said, as he himself does a little later, that it is because the element and the letter (γράμμα) are the same. Indeed, a few lines below the author says 'These same are also called elements.' But the truth is that the element is the phoneme, whereas the letters are the images (εἰκόνες) and characters. And the characters are twenty-four, but the phonemes ['allophones' in linguistic jargon] are many more.[65]

After this, the scholiast follows with a total count of sixty-six alphabetic sounds (στοιχεῖα), including forty-five vocalic and twenty-one consonantal, which correspond to the twenty-four letters (γράμματα). With this passage, we come across another fundamental duality of the concept: the

---

[61] *Scholia in Dionysii Thracis Artem grammaticam*, Grammatici Graeci 1.3, ed. by A. Hilgard (Leipzig: B. G. Teubner Verlag, 1901) (hereafter cited as Schol. in Dion. Thrax) – when no details are given, page numbers refer to Hilgard throughout this chapter.

[62] Dionysius Thrax, *La grammaire de Denys le Thrace*, 2e éd. rev. et augm., ed. J. Lallot, Sciences du langage (Paris: CNRS Éditions, 1998).

[63] Dionysius Thrax, *Techne grammatike*, ed. G. Pecorella (Bologna: Cappelli, 1962).

[64] pp. 30–31.

[65] p. 32.

στοιχεῖα are not only 'letter' and elemental atom, but they are also a sound and a written sign. The fluid alternation between στοιχεῖα and γράμματα came from earlier times and would be persistent; when Aristotle wanted to be unequivocal in speaking about the written signs, he used τὰ γραφόμενα.[66]

II. Simplicity and Pedagogy

Ἰστέον ὅτι τὰ ὀνόματα τῶν στοιχείων ἄκλιτά εἰσι. Καὶ διὰ τί εἰσιν ἄκλιτα; Ἐπειδὴ ἀρχαί εἰσι, καὶ αἱ ἀρχαὶ ἁπλαῖ καὶ ἀποίκιλοι ὀφείλουσιν εἶναι· ἢ ὅτι καὶ οἱ θεμέλιοι τὸ ἀμετάθετον ὀφείλουσιν ἔχειν· ἄλλως δὲ διὰ τὸ ἀρτιμαθὲς τῶν παίδων οὐ κλίνονται, ἵνα μὴ πολλὰ γινόμενα δυσκατάληπτα αὐτοῖς γένωνται.

One should know that the names of the letters are indeclinable. Why are they indeclinable? Because they are principles (ἀρχαί), and principles must be simple (ἁπλαῖ) and homogeneous (ἀποίκιλοι). Or also because like the foundations, they must have to do with what is unalterable. Or maybe they are not declined because then there would be too many hard to grasp new concepts for the children who are just starting to learn.

The fact that they are 'indeclinable', reveals another aspect of their being
ℙ ἀδιαίρετος, but emphasizing their being *unchangeable*, invariable. Here for the first time in the grammatical literature we encounter the very important 'constructive' image found in the Aristotelian definition, the fact of being a 'component', ἐξ ὧν σύγκειται. We also find for the first time the association with children that seems to pertain to the στοιχεῖα through the ages and cultures.[67] Later, I shall have occasion to elaborate on this particular facet which is of course not unrelated to the primordiality of the elements.

III. The Semitic Origin

The mythical Phoenician origin of the alphabet gives rise to a number of etymological speculations and reveals new aspects of the letters.

Καλοῦνται δὲ τὰ στοιχεῖα φοινίκεια, ἐπεὶ ὁ Κάδμος Φοῖνιξ ὢν εἰς Ἕλληνας ταῦτα μετήνεγκεν· ἢ ὡς φωνίκειά τινα ὄντα, ἤτοι φωνῆς ἐγ-

The letters are called Phoenician because it was Cadmus, a Phoenician, who brought them over to the Greek. Or maybe, if an ω replaces the diphthong οι, they are

---

[66] In *De interpretatione*, with Ammonius' comment, cited in Vogt-Spira, '*Vox* und *Littera*', 304.

[67] Cf. Dornseiff, *Alphabet*, 17–20.

γραμμάτου δυνάμεις καὶ εἰκόνες, τοῦ <ω> μεταβληθέντος εἰς τὴν <οι> δίφθογγον... ἢ φοινίκεια, ἐπεὶ διὰ μίλτου, ὅπερ ἐστὶ χρῶμα **φοινικοῦν**, πρότερον ἐγράφετο ἢ ὅτι πρότερον ἐν πετάλοις φοινικείοις ἐγράφετο· ἢ ὅτι ἐν πυρρώδει κηρῷ ἐτυποῦντο· ἤ, ὅπερ ἐστὶ κρεῖττον, ὅτι **φοινίσσεται** ὑπ᾽ αὐτῶν ὁ νοῦς ἤγουν λαμπρύνεται.

called Phoenician because they are phonic (φωνίκεια), being utterances and counterparts of written speech… Or they are called Phoenician because it was with ochre, which is a *reddish* colour, that people first wrote. Or because the earliest writing was made on red clay tablets; or because they impressed them on red-looking wax. Or, what is more likely, the mind *turns golden red* through them, as if it were polished.[68]

The variety of the explanations gives an idea of the uneven texture of the genre, but it is not difficult to discern some valuable features. First, there is a notable original Semitic relation. If we assume that there is a Semitic consonantal substrate in the alphabet, and given the nature of the abjads, we may conceive of an original feature of the στοιχεῖα, prior to the vocalic evolution of the Greek alphabet: they are *unvocalised*, in what might be expressed as a sort of quiescence. ℙ

I would also like to note and retain the curious 'gilding' or 'polishing' of the mind, which shows the letters as *enlightening*, and which goes together ℙ with the reference to the golden-red phoenix and its well-known *solar* ℙ connotations.[69] In another scholium (p. 312) is found a common saying directly related to this: φῶς νοῦ ἐτυμολογεῖται ἡ φωνή, 'the word φωνή comes from φῶς νοῦ, the "light of the mind".'[70]

Further down (p. 32), there is a little remarkable variation on the *Phoenician* label, according to which they were 'sent down' by Hermes, thus making the elements *Hermetic* in a certain way. ℙ

Τινὲς δέ φασι τοὺς χαρακτῆρας τῶν στοιχείων τοὺς παρ᾽ ἡμῖν ὑπὸ Ἑρμοῦ

Some say that the characters of the elements as we have them were *sent*

---

[68] p.191–92.

[69] Cf. Herodotus, *Historiae*, 3rd ed., ed. K. Hude, Scriptorum Classicorum Bibliotheca Oxoniensis, Repr. 1990 (Oxford: Oxford University Press, 1927), II. 73, ὄρνις ἱρός, τῷ οὔνομα φοῖνιξ [...] τὰ μὲν αὐτοῦ χρυσόκομα τῶν πτερῶν, τὰ δὲ ἐρυθρά·, 'a sacred bird by the name of Phoenix […] some of its feathers are golden and some red.' A wealth of related references is found in R. v. d. Broek, *The Myth of the Phoenix, According to Classical and Early Christian Traditions* (Leiden: E. J. Brill, 1972), 233ff.

[70] Found also in G. Choeroboscus, *Περὶ τρόπων ποιητικῶν*, ed. L. Spengel, vol. 3, Rhetores Graeci (Leipzig: Teubner, 1856), (reprint 1966), 249.19, and other contemporaneous authors.

ἐν φοίνικος φύλλῳ γεγραμμένους **κατα-πεμφθῆναι** τοῖς ἀνθρώποις, διὸ καὶ φοινίκεια λέγεται τὰ γράμματα.

down to men by Hermes written on a date [φοίνιξ] leaf, and this is why the letters are called φοινίκεια.

It will be noted that here the writer equates the letters (γράμματα) with χαρακτῆρες τῶν στοιχείων, the graphical traces of the elements/phonemes. The unpredictable identification and contrast with γράμμα, pointing to the phonetic nature of στοιχεῖα, reinforces the impression of their intermediary nature: like air or breath, they are material yet subtle. 'Sent down' from heaven is a Greek semantic equivalent of the Arabic standard term for a 'revelation', *tanzīl*, a 'descent', and it highlights here the divine origin of writing.

1. Nature-given or Created

A variety of alleged creators of the letters can be found in the commentaries, including Sisyphus, Prometheus and other usual mythical names, but one of the authors concludes: οὐκ ὀρθῶς λέγουσιν· καὶ γὰρ ἡ φύσις ἡνίκα ἐδημιούργησε τὸν ἄνθρωπον, ἐχαρίσατο αὐτῷ τοιαύτην ἐπιτηδειότητα, ὥστε τεχνάσασθαι ταῦτα τὰ στοιχεῖα, 'They are wrong, for Nature, when fashioning mankind, graced them with this ability to devise the letters.' And similarly in p. 317, Αἰτίαν δὲ τῆς τάξεως οἶδεν οὐδὲ εἷς· φύσεως γάρ εἰσιν εὑρήματα, 'No one knows the origin of this order, for they [the letters] are Nature's inventions.' In some texts (p. 491), presumably of later origin and influenced by a monotheistic theology, an enigmatic 'element teacher' or 'letterer', ὁ στοιχειωτής, is mentioned to explain the arrangement of the letters in the alphabet.

IV. More Etymologies

As in the previous passage, a number of disparate opinions are reported, this time regarding the etymology of the term:

Λέγεται δὲ στοιχεῖον ἢ παρὰ τὸ **στείχω**, τὸ **ἐν τάξει** πορεύομαι, ἢ ἀπὸ τοῦ **στοίχου** τοῦ σημαίνοντος τὴν τάξιν, ἢ ἀπὸ Στοίχου τινός, Ἀθηναίου γηγενοῦς, εὑρόντος αὐτά, ὡς Πινδαρίων φησί· σχηματίζεται δὲ παρὰ τὸ στοῖχος στοιχεῖον.

A letter is so called after *stepping*, to walk *with order*, or after the *line* which indicates order, or after a certain Stoichos, son of Athenaeus, who invented them according to Pindarion. The word στοιχεῖον is thus patterned after στοῖχος [rank].

Aside from the eponymous suggestion, of which there are many variations, and which to a certain extent shows how puzzling the origin of the word was perceived to be, there is the crucial reference to the sequential 'order' of the στοῖχος as mentioned above[71] and championed by Burkert. Even more importantly, the meaning of στοῖχος is made clearer by another etymology.

1. Number and Order

ὡς δὲ ἔνιοι, ἀπὸ τοῦ δι' αὐτῶν τοὺς ἀριθμοὺς τυποῦσθαι· **στοῖχος γὰρ παρὰ τοῖς παλαιοῖς ὁ ἀριθμός**· τοιγαροῦν οἱ Σικυώνιοι κατὰ φυλὰς ἑαυτοὺς τάξαντες καὶ ἀριθμήσαντες Διὸς Στοιχαδέως ἱερὸν ἱδρύσαντο. Ἄλλοι παρὰ τὸ στιχηδὸν γράφεσθαι στιχεῖον, καὶ πλεονασμῷ τοῦ «ο» στοιχεῖον·

There are some who say [that they are called στοιχεῖα] because numbers are written with them, *for among the ancient, a graduated line was the number*. This is why the Sicyonians, when they ordered and numbered themselves in *philai*, built a temple to Zeus Stoichadeus. Yet others say the word is really στιχεῖον [line], due to their being written in lines [στιχηδὸν], and that the added <ο> makes it στοιχεῖον.

Here is made explicit for the first time the all-important connection between στοιχεῖον and number. The formulation, based on the step-by-step linear order of a στοῖχος, looks from our modern understanding of arithmetic like a clear reference to the number line of the positive integers, hence the natural reference to a rank of soldiers. There is also in this image a neat analogy with the sundial etymology we had encountered before, and it also makes it easy to develop similar comparisons with astronomical movements in their regular progress through the graduated spheres.[72] It should also be related to the association with Pythagoras through the geometrical shaping of the characters,[73] and to discussions about the number of the elements which we shall soon find in the scholia. Also, when related to the phonetic nature of the στοιχεῖα, we have here the

---

[71] See p. 9.

[72] This is precisely the image found in R. Caballero, 'El Comentario anónimo al *Tetrabiblos* de Tolomeo: Edición crítica y traducción castellana de los escolios metodológicos del libro I (in Ptol. Tetr. 1.1.1–1.3.1)', *MHNH* (Universidad de Málaga), no. 13 (2013): 225, «Τάξει καὶ δυνάμει.» Τουτέστιν ἀριθμῷ, '"regarding order and efficacy", that is, number,' with a reference to the calculation of the movements of the heavenly bodies.

[73] Lagercrantz, *Elementum*, 5.

ℙ idea of *ordered* sound which becomes utterance, 'for order is στοῖχος', as explained in the following fragment:

Οἱ δὲ παρὰ τὸ στοῖχος στοιχεῖον, τὸ ὡς ἐκ τάξεως φωνὴν ἤγουν ἐκφώνησιν ἀποτελοῦν· στοῖχος γὰρ ἡ τάξις.	Some say στοιχεῖον is modelled on στοῖχος, because they believe that the voice (φωνή) becomes an utterance (ἐκφώνησις) thanks to its order, for order is στοῖχος.

The image here, which is of capital importance and has a long philosophical history, is that of the division of the acoustic continuum into phonetic units, and in view of the above, it is conceived as a sort of 'numbering' of the raw phonetic material of language, in order to create meaning.

2. Walls and Ramparts

Bringing into focus new facets through more etymologies, some passages in the collection explain in the following way the association of the elements with walls:

Οἱ δὲ παρὰ τὸ τοῖχος τοιχεῖον, καὶ πλεονασμῷ τοῦ <ς> στοιχεῖον· ἐν γὰρ τοίχοις ἔγραφον τὸ πρότερον... ὥσπερ γὰρ τὸ τεῖχος φυλακή ἐστι καὶ ἀσφάλεια τῶν ἐν τῇ πόλει, οὕτω καὶ τὰ στοιχεῖα φυλακή ἐστι τῶν παλαιῶν πραγμάτων· δι᾽ αὐτῶν γὰρ ἡμῖν τοῖς μεταγενεστέροις ἐφυλάχθη καὶ ἐν γνώσει ἐγένετο.	Others say the original word is τοῖχος, τοιχεῖον (wall), with an added σ, because at first people wrote on the walls… Just as a wall is a protection and a reassurance for what is within the city, the letters are a protection for the matters of the ancients, since it is through them that such things have been kept for us the later born, and brought to our knowledge.

ℙ This makes the elements have also a protective, defensive, *safeguarding* aspect, which has to do with the above mention of Zeus *Stoichadeus*, god of the *phylai* or of battle ranks, inasmuch as they are considered groups of numbered individuals. In this regard, later on, in the comparative phase of this work, it will be relevant to explore the semantic parallel with the Hebrew YHWH *Tzeba'ot*, 'Lord of Hosts'.[74] In the Qur'an, besides the recurring ascription of the 'armies' (*junūd*) of heaven and earth to God,

[74] Cf. Ps. 46: 7; and see below pp. 104, 111, and 205. A remarkable Semitic parallel is found in the Arabic word for 'battalion', *katība*, derived from *kataba*, 'to write'.

we find mention of the angels ordered in ranks, *ṣaffāt* (37: 1),[75] cognate to *ṣaffāf*, a typesetter or composer.[76]

3. What about γράμματα*?*

The etymology of γράμματα also comes up in another passage which tries to clarify the difference between them and στοιχεῖα:

οἱ δέ φασιν, ὅτε μὲν γράφονται, λέγονται γράμματα, ὅτε δὲ ἀναγινώσκονται, λέγονται στοιχεῖα. Καὶ στοιχεῖα εἴρηται παρὰ τὸ ἔχειν στοῖχόν τινα καὶ τάξιν, γράμματα δὲ διὰ τὸ γραμμαῖς καὶ ξυσμαῖς τυποῦσθαι· ἢ παρὰ τὸ γλάπτω, τὸ κοιλαίνω, γλάμμα, καὶ κατὰ μετάθεσιν τοῦ «λ» εἰς τὸ «ρ» γράμμα· ἢ παρ᾽ ὅσον ἐκ τῶν παρὰ τοῖς γεωμέτραις λεγομένων γραμμῶν ἐσχημάτισται· καὶ γάρ, ὥς φασιν, ὁ Πυθαγόρας τοῦ κάλλους αὐτῶν ἐπεμελήθη, ἐκ τῆς κατὰ γεωμετρίαν γραμμῆς ῥυθμίσας αὐτὰ γωνίαις καὶ εὐθείαις καὶ περιφερείαις.

Some say that when written they are called γράμματα, and when read aloud στοιχεῖα. They are called στοιχεῖα because they have some sort of rank and order, and γράμματα because they are drawn with lines [γραμμαῖς] and scratches. Or, because with a metathesis of λ to ρ, carving becomes γλάπτω, whence γλάμμα and then γράμμα. Or also, following the use of geometricians, because letters are fashioned with lines [γραμμῶν]; they say accordingly that Pythagoras cared about their beauty, harmonising their lines with angles, straight edges and circumferences.

The mention of the verb γλάπτω, a form of γλάφω, meaning carving or engraving, introduces the considerations about the crafts related to the production of the letters. As I shall have the occasion to show later, this demiurgic dimension has an important bearing on the cosmogonic role of the alphabet.

As in Aristotle's definition, there is here again the mention of the geometric diagrams, but this time with Pythagoras involved in the development of the letters' shapes. Pythagoras is related to the origin and the nature of the στοιχεῖα in many more ways that we will explore in the next chapter.

---

[75] Cf. the glose in F. Hamza, trans., *Tafsīr al-Jalālayn* (Amman: Royal Aal al-Bayt Institute for Islamic Thought, 2016), 37: 1, 'the angels who range their souls in worship or their wings in the air awaiting their orders.'

[76] Cf. E. W. Lane, *Arabic-English Lexicon*, 2 vols. (Cambridge: Islamic Texts Society, 1984), s.v. *ṣ-f*.

V. Attributes of the στοιχεῖον

A recurring topic is that of the attributes or qualities of the individual στοιχεῖα which allow them to be grouped in categories. In the following commentary, four are enumerated, but they can be five or six according to other authors.

Τούτῳ οὖν τῷ στοιχείῳ, τουτέστι τῇ ἐκφωνήσει, παρέπεται τέσσαρα· **χαρακτὴρ** μέν, ὡς τρίγωνον σχῆμα ἢ ἡμικύκλιον ἢ στρογγύλον καὶ τὰ ἑξῆς· **ὄνομα** δέ, ὡς τὸ ἄλφα ἢ βῆτα καὶ τὰ λοιπά· **δύναμις** δέ, ὡς μακρόν, βραχύ, δασύ, ψιλόν, φωνῆεν, σύμφωνον καὶ τὰ λοιπά· **τάξις** δέ, ὡς τὰ μὲν προτακτικὰ τῶν φωνηέντων καὶ συμφώνων, τὰ δὲ ὑποτακτικά. Καὶ τὴν μὲν οὖν **ἐκφώνησιν** τῶν στοιχείων ἡ φύσις τοῖς ἀνθρώποις ἐξ ἀρχῆς ἐδωρήσατο, ταῦτα δὲ τὰ τέσσαρα, ἃ προειρήκαμεν παρεπόμενα τῷ στοιχείῳ, ἀνθρώπων ἐστὶν ἐφεύρεσις· διὸ καὶ παρ' ἡμῖν μὲν οἱ χαρακτῆρες τῶν στοιχείων τοιοῖδέ τινές εἰσιν, οὓς ἐδιδάχθημεν, παρὰ δὲ Πέρσαις ἕτεροι, παρὰ Σύροις δὲ ἄλλοι, καὶ παρ' ἄλλοις ἔθνεσιν ἄλλοι.

This element, that is the phoneme [ἐκφώνησις], has four attributes. First, the *character*, that is, a shape like a triangle or a semicircle or a curve and so on. Then, the *name*, like *alpha* or *beta*, etc. Third, the *pronunciation*, such as long, short, aspirated, unaspirated, vocal, consonant, etc. And finally, the *order*, by virtue of which some vowels and consonants come first while others follow. Now, the *phonetic individuality* itself of the elements was a gift of nature to mankind from the beginning, but the four attributes are human inventions, and this is why the characters are such as we have learnt them, but they are different by the Persians, and other by the Syrians, and yet others among other peoples.[77]

Here the στοιχεῖον is identified with ἐκφώνησις, which the context makes a kind of Nature-given 'phonetic individuality', and to it are added the humanly invented, or rather conventional, attributes, one graphic, χαρακτήρ, one acoustic, δύναμις, one numerical, τάξις, and one conceptual, ὄνομα – all relative, depending on cultural variations. According to this distinction, the στοιχεῖον is clearly and essentially *a phonemic unit*: a discrete acoustic linguistical unit. The final lines also make clear that while there is an ethnic, cultural level of the letters, there
ℙ is also a deeper level in which they are *cosmopolitan*, perceived as native wherever they are found.

Such attributes as the above allow for the elements to be grouped among themselves, just as sounds can be vowels or consonants, and as letters can be round or square, etc. This means that the letter-elements too

[77] p. 31.

are *classifiable*, something strikingly apparent in the comparison between the periodical table of chemical elements and the consonant table of the International Phonetic Alphabet. To exemplify the analogy, it can be said, for instance, that a voiced alveolar fricative is the same anywhere in the world, regardless of it being called *zed*, *zayin* or *za*, or being written *z*, ז or ز.[78]

THE INTERNATIONAL PHONETIC ALPHABET (revised to 2005)

CONSONANTS (PULMONIC) © 2005 IPA

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k g	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
Tap or Flap		ⱱ		ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible.

VI. The Four Cosmic Elements

The issue of the correspondence between the letters and the physical elements, or put otherwise, of the physical reality of the letter-elements, can be approached from different angles, which are all represented in the grammatical commentaries. The first image is that of the quaternary of the cosmic elements:

Εἴποι δ' ἄν τις αὐτὰ στοιχεῖα εἰρῆσθαι καὶ κατὰ **μίμησιν** τῶν τεσσάρων στοιχείων, πυρός, ὕδατος, ἀέρος, γῆς· ὥσπερ γὰρ ἐκ τούτων τῶν τεσσάρων στοιχείων σύγκειται πάντα καὶ **ἐν ὑποστάσει** ἐστὶ τὰ ἐν τῷ κόσμῳ, οὕτω καὶ ἐκ τῶν κδ΄ στοιχείων σύγκειται καὶ ἐν ὑποστάσει ἐστὶ πᾶς λόγος καὶ πᾶν σύγγραμμα καὶ πᾶν βιβλίον.

Someone might say that they are called στοιχεῖα because of their *imitation* of the four elements, fire, water, air, earth. Just as all things in the universe are composed of these four elements and *are sustained* by them, every word and every piece of writing and every book is composed by the twenty-four letters and is sustained by them.

---

[78] An admirable treatment of this kind of 'collection and division' in the Platonic dialogues is given in M. L. Gill, 'The Divine Method in Plato's Philebus', in *Plato's Philebus: Selected Papers from the Eighth Symposium Platonicum*, ed. J. Dillon and L. Brisson (Sankt Augustin: Academia Verlag, 2010), 42–46.

I will reserve for next chapter[79] a more detailed reference to the topic of the μίμησις, 'existential imitation' or 'representation', which appears here for the first time and is central to my argument, but it is important to clarify my reading of that relation here. Examining the structure of the sentence and the two verbs used, it is the second one that draws my attention: the things of the world, like books and words, ἐν ὑποστάσει ἐστὶ τῶν στοιχείων, that is, literally, 'they are/exist in the hypostasis of the στοιχεῖα.' I interpret this as 'on the hypostasis,' meaning that the element-letters are viewed as a supporting underlying 'material' on which the world, be it physical or linguistic, rests. The στοιχεῖα are here quite literally the *infrastructure*, whereas reality would be the *superstructure*.

1. Why Twenty-Four? More Cosmic Correspondences

The correspondence just mentioned is found above all in astronomical observations and knowledge, and in the *Scholia Marciana* (p. 196), we find for the first time the recurring motif of the correspondence with the hours of day and night, which is another echo of the early gnomonic meaning of στοιχεῖα:

> Κδ΄ λέγουσιν αὐτὰ εἶναι κατὰ μίμησιν τῶν κδ΄ ὡρῶν τοῦ νυχθημέρου.
>
> They are said to be twenty-four because they represent the twenty-four hours of day and night.

And more specifically: τὰ φωνήεντα τὴν ἡμέραν μιμοῦνται, τὰ δὲ σύμφωνα τὴν νύκτα, 'the vowels represent the day, and the consonants the night.'[80]

The letters are limited in number, which is related to their being integral. Their number can vary greatly depending on the historic stage of the alphabet, whether we count final letters and those used only for arithmetic purposes, like the *sampi*, or whether we count phonemes or only the written signs… but whatever the choices, they are numerable, forming a *countable* ℙ *set*. This reminds of an interesting observation made by Burkert:[81] 'one letter alone is nothing without its relation to the other letters, to the alphabetic system.' And he notes how what is found mostly in relevant

---

[79] See below p. 56.

[80] Schol. in Dion. Thrax, 323.

[81] Burkert, 'ΣΤΟΙΧΕΙΟΝ', 169.

discussions is the plural στοιχεῖα, which would be the equivalent of using an expression for the whole set, viz. ἀλφάβητος, *abecedarium*, or our usual ABC. Indeed, as will become clearer in the following pages, the subject of this book is above all that plural concept in its integrality, and only secondarily its inner properties, classification, and architecture.

2. The Moon and the Stars

Following on the astronomical correspondences, the *Scholia Londinensia* (p. 491) present an interesting association of the twenty-four γράμματα with the moon in particular, which reminds us of the Arabic association of the twenty-eight letters with the lunar mansions. The passage is lengthy and at times puzzling too, but well worth quoting.

Οὐκ ἀλόγως δὲ τούτῳ τῷ ἀριθμῷ οἱ παλαιοὶ ἐχρήσαντο· ἀλλ᾽ ἀπὸ τῶν νυκτὸς καὶ ἡμέρας ὡρῶν μετέθεσαν αὐτὰ ἐπὶ τὴν τῶν στοιχείων τάξιν, διὰ τὸ τὴν δύναμιν τῶν στοιχείων πάνυ τῷ σεληνιακῷ ἐοικέναι δρόμῳ, φωτίζουσάν τε τὰ πράγματα καὶ φωτιζομένην ὑπ᾽ αὐτῶν, καὶ οὖσαν σχῆμα τοῦ δρόμου τῆς σελήνης, ὁτὲ μὲν αὐξανομένης ὁτὲ δὲ μειουμένης διὰ τῆς οἰκείας δυνάμεως· καὶ πανσέληνον μὲν **μιμεῖται** διὰ τῆς τῶν φωνηέντων φύσεως, διχότομον δὲ διὰ τῶν ἡμιφώνων, ἀμφίκυρτον δὲ διὰ τῆς τῶν ἀφώνων τοῦ φθόγγου μειώσεως.

It is not without reason that the ancients used this number, but they did so by transposing them [γράμματα] from the hours of the night and day, and following the order of the letters [στοιχεῖα], because the power of the phonemes resembles greatly the course of the moon, shedding light on our matters and being illuminated by them, and having the disposition of the path of the moon, as it waxes and wanes by virtue of its own power. Indeed, the full moon *is represented* by the nature of the vowels, the half-moon by the semivowels, and the gibbous moon by the weakness in the utterance of the mute ones.

Thus, as their *lunar* correspondence is revealed, their number is shown to be determined by it. And then this association with the moon takes an even more unexpected and practical turn: ℙ

Εἶτα ὥσπερ αἱ Θεσσαλαί, φασί, γοητεύουσαι διὰ τῶν μαγγανειῶν βούλονται κατάγειν τὴν σελήνην, οὕτω καὶ ἡ **γραμματικὴ** μαγείᾳ τὴν φωνὴν τοῦ ἀέρος χορηγοῦσαν, εἰσιοῦσάν τε εἰς τὸ νοερὸν ἡμῶν καὶ αὖθις ἐξιοῦσαν, ἐπισκοπουμένη καὶ εἰς τοὺς ἑαυτῆς

It is like what they say of the Thessalian witches, who cast spells to bring down the moon. In the same way, *written language* leads the speech from the air into our mind through magic, and then brings it out again; watching over and holding down her own types [τύποι],

τύπους κατακλείουσα διὰ τῆς ἀνακυκλήσεως τοῦ κδ΄ ἀριθμοῦ περὶ τὴν τῶν γραμμάτων παγιδεύεται διαφοράν.

she is ensnared by the revolution of the number twenty-four along the variation of the letters [γράμματα].

The letters are perceived as magical or perhaps rather alchemical in the psycho-linguistic operation they perform, the 'alchemy of meaning' of which they are raw materials: the transformation of simple sounds in semantic aggregates. It is no wonder that some kind of magic comes up, since we touch here on the aporetic matter of the origin of language *qua* mental process.[82] But I shall refrain from entering now into these deep linguistic waters, to return instead to the heavens where wider associations are at play.

3. The Planets

Ὥσπερ δὲ ἐν τοῖς μετεώροις οἱ ἑπτὰ πλανῆται τὸ κῦρος τῆς διοικήσεως τῶν φαινομένων ἔχοντες καὶ τῶν ζῳδιακῶν οὐκ ἐκκλίνοντες, ἀλλ᾽ ἐπὶ τούτων μένοντες καὶ στρεφόμενοι διοικοῦσι τὸ φαινόμενον, οὑτωσὶ καὶ τὰ φωνήεντα τὸ κῦρος τῆς ἐγγραμμάτου φωνῆς κεκτημένα διὰ τοῦ σχηματίζεσθαι καὶ συμπλέκεσθαι τοῖς συμφώνοις οὐχ ὑπερβαίνει τοὺς τύπους τῶν κδ΄ γραμμάτων, ἀλλ᾽ ἐν τούτοις ἀεὶ καὶ διὰ τούτων τὴν αὐτὴν ἀνακυκλοῦντα πᾶσαν ἀποτελεῖ φωνὴν ἐγγράμματον, μηδενὸς εἰς τοῦτο προφερομένου ἑτέρου μήτε φθόγγων μήτε γραμμάτων, ὥσπερ οὐδὲ νὺξ οὐδὲ ἡμέρα παρὰ τὰς κδ΄ ὥρας εἰς ἀνακύκλησιν προσδεῖταί τινος, ἀλλὰ διὰ τούτων τὸν κύκλον καὶ τοὺς ἑλιγμοὺς ποιεῖται τῆς οἰκείας περιφορᾶς. Καὶ τὰ μὲν γράμματα διὰ

Just as the seven planets in heaven have the sovereignty in the administration of the observable motions, never leaving the zodiac signs, but remaining always above them and revolving as they go through the visible heaven, thus do the vowels have the sovereignty of the written speech, as they are given shape and are combined with the consonants without ever transgressing the characters of the twenty-four letters, but rather by always being among them and through them, they bring into being the ever recurring wholeness of the written speech, nor do the voice or the letters move ahead of one another in order to accomplish this. Just as neither night nor day need anything aside from the twenty-four hours for their revolution, but rather complete through them the cycle and rotations of their own course, the letters

[82] Whorf's observation is most apt here, and refreshing too, coming as it does from someone who had reflected so deeply about language: 'thinking is most mysterious, and by far the greatest light upon it that we have is thrown by the study of language,' B. L. Whorf, 'Language, Mind, and Reality', in *Language, Thought, and Reality* (MIT Press, 1956), 252.

τοῦτο καὶ οὕτω πως περάσματος καὶ ἀριθμοῦ ὡρισμένου τετύχηκεν.

also, through this and in this way, obtain finiteness and a defined number.

If the letters as a whole had been compared to the moon in their general function, now they are, in their specifics, compared to the planets and the zodiac as they interact with each other. This remarkable simile, where the travelling vowels go through the twenty-four divisions of the sphere, immediately reminds one of the Arabic term for vocalisation marks, *ḥarakāt*, meaning 'movements'. It also brings up the question of the status of vowels in their relation to consonants: in the Greek language, for the first time, the vowels acquired the status of letters which they never had in the Semitic abjads. And yet, in this very Hellenistic exegesis, the vowels are clearly considered of a different class altogether. This question is that of two different conceptions of what an alphabet is: either a homogeneous or a hybrid series.

4. Astrological Correspondences

To complete the previous passage on the planetary relations, here are the correspondences of the seven vowels:

Καὶ τί δήποτε ὁ τεχνικὸς τῶν φωνηέντων τὸν ἀριθμὸν μέχρι τοῦ ἑπτὰ ὁρίζεται; Καί φαμεν ὅτι ἴσα αὐτὰ τῷ ἀριθμῷ τῶν χορδῶν τῆς λύρας τοῦ Ἀπόλλωνος ἐποίησεν, ἢ κατὰ **μίμησιν** τῶν ἑπτὰ ἀστέρων τῶν πλανήτων τοῦ οὐρανοῦ· πλάνητες γάρ εἰσιν ἑπτά, Κρόνος, Ζεύς, Ἄρης, Ἥλιος, Ἀφροδίτη, Ἑρμῆς καὶ Σελήνη. Ταῦτα γὰρ τὰ φωνήεντα τοῖς πλάνησιν ἀνάκεινται· καὶ τὸ μὲν «α» φασὶ τῇ Σελήνῃ ἀνακεῖσθαι, τὸ δὲ «ε» τῷ Ἑρμῇ, τὸ δὲ «η» τῇ Ἀφροδίτῃ, τὸ δὲ «ι» τῷ Ἡλίῳ, τὸ δὲ «ο» τῷ Ἄρει, τὸ δὲ «υ» τῷ Διί, τὸ δὲ «ω» τῷ Κρόνῳ.

And why would the Craftsman determine the number of the vowels as seven? We say it is because he made them equal in number to the seven strings of Apollo's lyre, or as a *representation* of the seven wandering stars of the sky. For the planets are seven, Saturn, Jupiter, Mars, Sun, Venus, Mercury and the Moon. Now, the vowels are dedicated to the planets: α to the Moon, ε to Mercury, η to Venus, ι to the Sun, ο to Mars, υ to Jupiter, ω to Saturn.[83]

As found elsewhere, here we have another demiurgic name, ὁ τεχνικός, the Craftsman, who assigns cosmical correspondences, and once again speaks of a heavenly or principial nature of the letters or some kind of

[83] p. 198.

'arch letters'.[84] The image of Apollo, and of the lyre devised by Hermes and given to his brother as an endearing gift,[85] is anything but casual and emphasizes and clarifies the connection between music, language and heavenly order. Harking back to the previous paragraphs, it is important to keep in mind that we are still here, simultaneously, on both levels, the psychological and the astronomical, in 'a realm of patterned relations inconceivably manifold and yet bearing a recognizable affinity to the rich and systematic organization of language, including *au fond* mathematics and music.'[86]

5. Microcosmic Correspondences

A natural consequence of the macrocosmic correspondences of the letters is that there will also have to be a direct correspondence with the parts of the human compound:

τὰ μὲν φωνήεντα τῇ ψυχῇ ἐοίκασι, τὰ δὲ σύμφωνα τῷ σώματι· καὶ ὥσπερ ἡ ψυχή, εἰ καὶ χωρὶς τοῦ σώματος δύναται εἶναι, ἀλλὰ δεῖται τοῦ σώματος εἰς τὸ ἀποτελέσαι τὴν σύστασιν τοῦ ζῴου, τὸν αὐτὸν τρόπον καὶ τὰ φωνήεντα, εἰ καὶ καθ' ἑαυτὰ δύνανται παραλαμβάνεσθαι καὶ ἀφ' ἑαυτῶν ἐκφωνεῖσθαι, ἀλλὰ δέονται τῆς τῶν συμφώνων συντάξεως εἰς τὸ ἀποτελέσαι τὴν ἐγγράμματον φωνήν.

The vowels resemble the soul, and the consonants the body. Just as the soul, even though it can exist outside the body, needs the body to produce the compound of life, just so the vowels, even though they can be used and uttered on their own, need the addition of the consonants in order to produce the written speech.[87]

And more fundamentally in the *Collectio Marciana* (p. 317):

Ποσαχῶς τὸ στοιχεῖον; Τριχῶς· στοιχεῖον ἡ ἐκφώνησις, στοιχεῖον ὁ χαρακτήρ, στοιχεῖον καὶ τὸ ὄνομα. Καὶ διὰ τί λέγεται τριχῶς; Διότι καὶ τῷ ἀνθρώπῳ τρία παρέπεται, τὰ τῆς ψυχῆς, τὰ τοῦ σώματος καὶ τὰ τῶν ἐκτός·

In how many ways do we use 'element'? – In three: the pronunciation is an 'element', the character is an 'element', and the name [of each letter?] is also an 'element'. And why do we have these three uses? – Because man also has threefold attributes: those of the soul, those of the body and those of the external.

This is the basis of a kind of letter *melothesia*, the correspondence between

---

[84] See below, p. 32.

[85] *Homeric Hymn to Hermes*, 46ff.

[86] Whorf, 'Language, Mind, and Reality', 247–8.

[87] p.198.

parts of the body and zodiacal signs, which evolved over the centuries into countless applications in what was effectively a common ground of astrology, medicine and magic.[88]

VII. Graphical Layout

The layout of the lines and the direction of writing are yet another aspect of the letters discussed in the *Scholia Londinensia* (p. 484):

Τῶν ἀρχαίων οἱ μὲν βουστροφηδὸν ἔγραφον, οἱ δὲ κιονηδόν, οἱ δὲ πλινθηδόν, οἱ δὲ σπειρηδόν·

Some of the primordial people wrote as the oxen go, some vertically as in columns, others as if forming a rectangle and yet others in zigzag lines.

βουστροφηδόν

Α Β Γ Δ Ε Ζ Η Θ
Π Ο Ξ Ν Μ Λ Κ Ι
Ρ Σ Τ Υ Φ Χ Ψ Ω

κιονηδόν

Α Ε Ι Ν Ρ Φ
Β Ζ Κ Ξ Σ Χ
Γ Η Λ Ο Τ Ψ
Δ Θ Μ Π Υ Ω

πλινθηδόν

Α Ω Ψ Χ Φ Υ Τ
Β Σ
Γ Ρ
Δ Π
Ε Ο
Ζ Ξ
Η Θ Ι Κ Λ Μ Ν

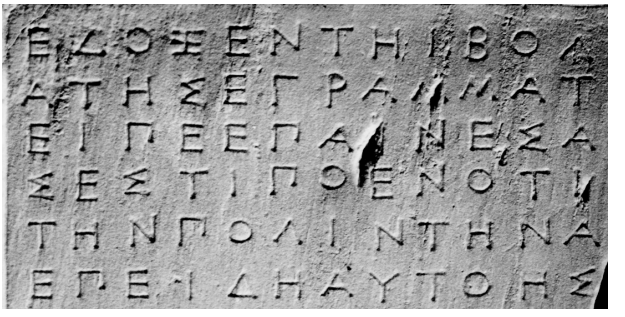
σπειρηδόν

Α Θ Ι Π Ρ Ω
Β Η Κ Ο Σ Ψ
Γ Ζ Λ Ξ Τ Χ
Δ Ε Μ Ν Υ Φ

There had been mention before of the shapes and the proportions of the letters, but this catalogue of possibilities makes me wonder about an architecture among the elements, a geometry established by their interrelations. And we may surmise that the elements, having to do by definition with ranks and order, are bound to certain kinds of order and disposition. Could we say they are geometric, or perhaps even somehow stereometric, having three-dimensional volume? It will be seen that this is, with a slightly different emphasis, an aspect of the same organicity already listed above (p. 6) as one of the properties of the elements. In fact, these layout variations should be considered in the light of the prevailing layout of the classical inscriptions, the *stoichedon* grid, which would influence the

[88] See Dornseiff, *Alphabet*, 81n.

development of Hebrew square script and that, as shown by its name, has a direct relation to the kind of order implicit in the word στοιχεῖον, the battle ranks mentioned above.



ATHENIAN DECREE IN STOICHEDON STYLE, 4TH CENTURY BC [89]

VIII. Sanchuniathon and the Snakes

One last Greek grammatical passage worthy of close attention comes from Eusebius and has to do with the mythical Phoenician figure of Sanchuniathon and the celestial origin of the letters:[90]

... θεὸς Τάαυτος μιμησάμενος τὸν οὐρανον τῶν θεῶν ὄψεις, Κρόνου τε καὶ Δαγῶνος καὶ τῶν λοιπῶν, διετύπωσε τοὺς ἱεροὺς στοιχείων χαρακτῆρας.

… having assimilated the sky, the images of the gods, of Kronos and Dagon and the others, the divine Taautos [identified with the Egyptian Thoth] impressed through [διετύπωσε – or shaped, cast, stamped, modelled] the sacred characters of the element-letters.

We had come across the root of τύπος, an impression or print, as one among the means of reproducing letters, but this is the first time that we find it clearly elevated to a 'divine' function, which is certainly not unrelated to the concept of the *arch-type* or *archetype*, the principial mould, which we shall discuss at a later stage. Thoth 'prints' or rather, less anachronistically, 'stamps' the letters after the celestial divine pattern. Τύπος denotes most

---

[89] Epigraphic Museum, Athens, EM 6900b (IG II2 17). Reproduced by permission. See P. A. Butz, *The Art of the Hekatompedon Inscription and the Birth of the Stoikhedon Style*, Monumenta Graeca et Romana 16 (Leiden: Brill, 2010), for a recent treatment. A wealth of epigraphic evidence can be consulted at Attic Inscriptions Online (AIO), https://www.atticinscriptions.com/

[90] Eusebius of Caesarea, *Praeparationis evangelicae libri XV*, ed. F. A. Heinichen (Sergiana Libraria, 1842), 45.

stages of the printing procedure: from the mould or model to the pattern and the final impression itself.[91]

Further down there is another mention of Taautos and more details about his creation of the letters:

Ὁ δ' αὐτὸς πάλιν περὶ τῶν Φοινίκων στοιχείων ἐκ τῶν Σαγχουνιάθωνος μεταβαλὼν, θέα ὁποῖά φησι περὶ τῶν ἑρπυστικῶν καὶ ἰοβόλων θηρίων, ἃ δὴ χρῆσιν μὲν ἀγαθὴν ἀνθρώποις οὐδεμίαν συντελεῖ, φθορὰν δὲ καὶ λύμην, οἷς ἂν τὸν δυσαλθῆ καὶ χαλεπὸν ἰὸν ἐγχρίμψειεν, ἀπεργάζεται.	He in turn, succeeding Sanchuniathon with regard to the Phoenician letters, brings them to completion divine, as he says they are, fashioned after venomous reptiles, such as will not be of any use or benefit to mankind, but rather for destruction and corruption, for those whom he approaches with this deadly and cruel poison.[92]

There is here an obvious reference to the harsh critique of writing recounted in Plato's *Phaedrus*, when Thoth brings to Egypt the dubious gift of the written word – writing is deadly as poison. But there is also an important association with the snakes, in the immediate visual symbolism of their moving and gliding lines, like the lines of writing do with certain materials, and also in the traditional mythical symbolism of their telluric force, as a furtive dynamic power from the earth.

With these passages I shall add two new properties to the elements: they are of *divine* origin, which was already confirmed by their being 'Hermetic' ℙ and their descent from heaven (see p. 19); and they can also be lethal, harmful, *deleterious*, or in any case sharing in a 'slippery' or crafty nature, ℙ remarkably close again to the attributes of Hermes.

C. Latin Grammarians

In order to avoid needlessly burdening this first chapter, I have consigned the bulk of my Latin citations for this chapter to Appendix A, where the interested reader can find them with a translation in parallel columns.

During the course of this chapter I have already made a few references to the Latin grammatical tradition and to the concept of *elementum* when appropriate. In the following lines I will only add a few more particulars

---

[91] See *A Greek-English Lexikon*, ed. H. Liddell and R. Scott (Oxford: Oxford University Press, 1968), *s.v.* τύπος (hereafter cited as LSJ); cf. also below p. 115.

[92] Eusebius, *Praeparatio*, 48.

that stand out from the specialised literature[93] and may complement the information on some of the topics brought up in the previous pages.

*

The Romans had a rich and ancient tradition of grammatical studies,[94] and it is remarkable how, in spite of the great influence that Greek scholarship had on the development of its Roman equivalents, and even though the discipline itself preserved for the most part its Greek name,[95] the Latin grammatical tradition never ceased to exhibit traits of its own. It is remarkable how the Latin *artes* tend to follow a different order of exposition, as if the foundations were conceived in a different way, but there was in Latin grammars a customary initial section devoted to phonetics, the 'phonetic complex', consisting of two consecutive chapters dedicated respectively to *vox* (as translation of φωνή) and to *litterae*[96] (as translation of both στοιχεῖα and γράμματα – note the plural),[97] and these sections are comparable to the section 'On the στοιχεῖον' found in the Τέχνη of Dionysius.

The pair στοιχεῖον–γράμμα did not find an exact parallel in the Latin pair of *elementum–littera*, but *littera* dominated as the broader term which designated both a graphical sign and the minimal unit of articulate speech.[98] As in the Greek tradition, this ever unclear definition of the

---

[93] Quotations are mostly from Keil's collection of Latin grammarians, H. Keil, ed., *Grammatici latini*, reprint of the 1855–80 Leipzig edn, 8 vols. (Hildesheim: Georg Olms, 1961) (hereafter cited as *GLK*); and other Latin grammatical sources. A most valuable online repository is *Corpus Córporum: repositorium operum Latinorum apud universitatem Turicensem*, ed. P. Roelli, Developed by the Institute for Greek and Latin Philology, University of Zurich (Zurich, 13 November 2015).

[94] See M. Seppänen, 'Defining the Art of Grammar: Ancient perceptions of γραμματική and grammatica' (PhD diss., Dept of Classics, University of Turku, 2014), 104ff.

[95] It could also be called *litteratura*; cf. A. Reinikka, *Ars Pseudo-Scauri: A Critical Edition and Commentary*, academic dissertation (Helsinki: Unigrafia, 2012), 45.

[96] The single or double *t* of *litera/littera* had to do with the history of the word and its etymology, and ended up being a matter of personal or local preference; see Ľ. Buzássyová, 'The 'Phonetic Complex' in Renaissance Latin Grammar Petrus Ramus's Dichotomies and Their Reflections in Two Vernacular Grammatical Texts', *Graeco-Latina Brunensia* (Bratislava) 21, no. 2 (2016): 82n.

[97] *Ibid.*, 82

[98] *Ibid.*

στοιχεῖον/*littera* has a bearing on modern linguistic discussion about the concept of phoneme, and as a liminal entity existing between orality and writing, it brings into modern discourse the awareness of an inclusive perspective that works at ease with the ambiguity.[99]

As in the Greek grammarians, the metaphysical or logical meaning of, in this case, *elementum*, is mingled with the properly grammatical. It is common to find the grammatical teachings in the form of a dialogue:

Grammaticae artis initia a voce oriantur, quae elementis constat. ***Elementum quid est?*** *unius cuiusque rei initium, a quo sumitur incrementum et in quod resolvitur.*	The beginnings of the art of grammar originate from the sound, which is formed of elements. **And what is an element?** The beginning of any single thing, from which it grows and into which it is resolved.[100]

The common doctrine of the *litterae* included the following assumptions: a 'letter' is a minimal phono-graphic unit (*elementum*) of 'writable utterance' (*vox litterata*); the concept of 'letter', as with the Greek alphabet, entails distinctions by 'properties'. In this grammatical model, every level of discourse is 'resolved' or 'broken up' (*solvitur*) into the parts of the level immediately below it, and all discourse is ultimately resolvable into 'letters', the 'elements' or 'atoms' of writing.[101] Or in the words of Sergius (c. 450):[102]

Omnis oratio soluatur in uerba, uerba denuo soluantur in syllabas, rursum syllabae soluantur in litteras, littera sola non habet quo soluatur. ideo a philosophis ***atomos*** *dicitur.*	Every sentence is resolved in words; words resolve in syllables; syllables resolve in letters, but the letter alone has nothing to resolve into. This is why it is called *atomos* by the philosophers.

And also on this physical note Priscian[103] gives the Latin equivalent of the cosmological association with the elements.

literas autem etiam elementorum vocabulo nuncupaverunt ad similitudinem mundi elementorum […] litera	They called the letters with the name of the elements because of their resemblance to the elements of the cosmos […] The letter

---

[99] See, Vogt-Spira, '*Vox* und *Littera*', 296.

[100] *Audacis de Scauri et Palladii libris excerpta* (Keil VII).

[101] M. Irvine, *The Making of Textual Culture: 'Grammatica' and Literary Theory 350-1100* (Cambridge: Cambridge University Press, 2006), 100.

[102] *GLK*, 4, 475.

[103] *Institutionum Gramaticarum* (Keil vol. II).

igitur est nota elementi […] abusive tamen et elementa pro literis et literae pro elementis vocantur.	is the sign [*nota*] of the element […] It is a misuse when they call the elements letters and the letters elements.

Even though *elementum* had been used with a physical meaning from the time of Lucretius, this awareness and its consequences do not appear in the Latin grammatical literature in the same way that it did among the Greek scholars. Even though several of the properties I have noted for the Greek στοιχεῖα are also found among Latin grammarians, like the divine origin of writing, there is one of them which is remarkably absent, and it is the relation to number and the great emphasis given to their harmonious order. This arithmetical dimension of the Latin script, or rather the lack of it, will be one of the topics treated in the next chapter, dedicated to number.

D. Conclusion

By way of conclusion I would simply like to bring together all the different properties or attributes of the στοιχεῖα which have been labelled through the previous pages, in order to have a more compact vision of where we stand before continuing with the research.

According to the notes above, and although several of these are rather tentative, I would now say that the στοιχεῖα/*elementa* are, in turns or simultaneously, and in no particular order:

1. constitutive
2. primordial
3. cosmogonic
4. causal
5. immanent
6. simple
7. ambiguous
8. corporeal
9. generative
10. axiomatic
11. organic
12. integral
13. minuscule
14. pervasive
15. operative
16. indefinable
17. genarchic
18. sequential
19. dancey
20. coeval
21. intermediary
22. unchangeable
23. unvocalised
24. enlightening
25. solar
26. Hermetic
27. ordered

28. safeguarding
29. cosmopolitan
30. classifiable
31. numerable
32. lunar
33. divine
34. deleterious

They generate and destroy, they dance and do not change, they define and are indefinable, they protect and help, they enlighten and are minuscule, they are the real atoms, requiring one another, everywhere, subtle and yet corporeal, Hermetic… With such a list of attributes at hand, I feel equipped to embark on the next phase of this research, and it will be easier to identify semantic analogues of these cosmic 'letters'. But first, in the next chapter, I plan to complete the definition of the object of research, and at the same time to establish a time frame based on the definition itself, by completing the picture of the στοιχεῖα with their numerical aspect.

Chapter 2

On the Tracks of Arithmetical Cosmology

In the previous chapter we found a definition of 'number', ἀριθμός, among the grammarians' attempts at defining the στοιχεῖον,[1] and the association they established is with order as στοῖχος, a 'row' or a 'queue', and as τάξις, an 'array'. They go as far as saying that the name of the στοιχεῖα is due to the fact that numbers are written with them, as if στοιχεῖα meant something like 'arithmeticals', or, indeed, 'numerals'.

In order to elucidate the relation between the elemental letters and the numbers, my first step will be to address the relation between numbers and letters in general, and then to clarify the meaning of ἀριθμός in the Greek tradition.

A. Number and Letter

'Numbers seek form in words and in signs.'[2] In this statement by Menninger, numbers are set apart as entities whose meaning is not exhausted by either their names or their written expression. In the Greek language, for instance, τριάκοντα, 'thirty', means etymologically 'three times ten,'[3] but for the greater part of the history of the language, down to the late Middle Ages,[4] it was written as λ, which does not reflect in

---

[1] See above p. 21.

[2] K. Menninger, *Zahlwort und Ziffer: eine Kulturgeschichte der Zahl*, 2 vols. (Göttingen: Vandenhoeck & Ruprecht, 1957), 67; page numbers refer to the German edition; English trans. by Paul Broneer, *Number Words and Number Symbols: A Cultural History of Numbers*, MIT, 1969.

[3] As incidentally does English *thirty*, from OE ðrítig. See A. L. Sihler, *New Comparative Grammar of Greek and Latin* (Oxford University Press, 2008), 418ff. and C. D. Buck, *A Dictionary of Selected Synonyms in the Principal Indo-European Languages* (University of Chicago Press, 2008), 936 (hereafter cited as DSS).

[4] The details of this history, including the earlier acrophonic numeral system and other less common developments are found in S. Chrisomalis, *Numerical Notation: A*

any way the composition of the number as expressed in τριάκοντα or, for example, as in the very clear Roman XXX, or as in our '30'. While the basic number-words are patterned on the structure of the human body,[5] and while they tend to parallel the arithmetical efficiency of the abacus array, numerals can exhibit a bewildering variety of expression.[6] This lack of correspondence between number-words and numerals, or between 'lexical numeral words' and 'graphic numerical notation'[7] (*Zahlwort* or *Zahlsprache* and *Ziffer* or *Zahlschrift*, in the useful German terms) can be easily ascertained again and again, until we recognise that numerals are far from being mere representations of number words, but that they exist as a parallel, and often only partially interdependent, system for notating numbers.

The sequence of number words in a language often predates and outlasts any given system of numerals as they may become established and replaced. We may instinctively think that numerals are simply 'copies' of number words, that there is a 'linguistic fit' of numerals,[8] but the rules that govern their syntax and usage do not in fact correspond to the rules of the number-word sequence, which usually follow calculation logic and stepwise gradation.[9]

Now, in the context of this work, observing this relation comparatively in Greek and Latin languages, we can appreciate a striking paradox of cultural history in that the Romans, who possessed such a subtly and precisely ordered lexical number sequence, used a system of numerals so cumbersome that it is hard to see how it could be a product of the same culture.[10]

Comparative History (Cambridge University Press, 2010). See also Menninger.

[5] V. Blažek, *Numerals: Comparative Etymological Analyses of Numeral Systems and their Applications* (Brno: Masaryk University, 1999), 325.

[6] See S. Chrisomalis, 'Re-evaluating Merit: Multiple Overlapping Factors Explain the Evolution of Numerical Notations', *Writing Systems Research* 9, no. 1 (2017): 5.

[7] Chrisomalis, 'Re-evaluating Merit', 5, attributes it ultimately to the 'difference between visual-graphic and oral-aural modalities.'

[8] *Ibid.*, 4–6.

[9] Some linguists argue that, in fact, what numeral systems do is to reflect, even more transparently than other parts of language, the very same principles of ordering that underpin human linguistic and mathematical capacities; see J. Gvozdanović, 'Remarks on Numeral Systems', in *Indo-European Numerals* (Berlin and New York: Mouton de Gruyter, 1992), 8.

[10] Menninger, *Zahlwort und Ziffer*, 64–65.

This paradoxical disjunction throws some light on the essential alterity of numbers, but from the point of view of this research it brings into focus, above all, the contrast between Greek and Roman numerals, and the fact that letters in Latin were never really equivalent to numerals; the Latin alphabet was never fully alphanumeric as the Greek was for so many centuries, and this is one reason why it figures only marginally in these pages.

Alphabetical numerical notation appears among the Greeks in the sixth century BC with what is called the Milesian numeral system. This system, based on the Phoenician alphabet's substrate,[11] was adapted from the Egyptian demotic numeral system, also based on three enneads or groups of nine letters for each decimal order,[12] as in the illustration below; it was adopted into Hebrew, Syriac and other languages, and expanded greatly between the fourth and seventh centuries AD, including its adoption into Arabic, until around the twelfth century, when the letters started being replaced by the Indo-Arabic positional numerals.[13] Alphabetic systems are still used today only in limited contexts such as liturgical texts, numbered lists, and divinatory magic, and in Greek itself, the letters are still used like numbers in the way we use Roman numerals in English.

α	β	γ	δ	ε	ς	ζ	η	θ
1	2	3	4	5	6	7	8	9
ι	κ	λ	μ	ν	ξ	ο	π	ϟ
10	20	30	40	50	60	70	80	90
ρ	σ	τ	υ	φ	χ	ψ	ω	ϡ
100	200	300	400	500	600	700	800	900

CLASSICAL GREEK ALPHANUMERIC CORRESPONDENCES [14]

[11] The Ionic alphabet, the one Panhellenic script from the fourth century BC 'until the Byzantine reform that established the minuscule script almost 1,300 years later, in the ninth century AD'; Psychoyos, 'The Forgotten Art of Isopsephy', 159.

[12] Chrisomalis, *Numerical Notation*, 58ff., 134ff. Psychoyos, 'The Forgotten Art of Isopsephy', 181, 184.

[13] For the centuries-long process of adoption, see Chrisomalis, *Numerical Notation*, 123, 221, and Psychoyos, 'The Forgotten Art of Isopsephy', 199ff. About the end of their generalised usage, see refs below, p. 277.

[14] The units in the first line are called the πύθμενες or bases of the counting system. Cf. Egyptian demotic and Greek tables in Chrisomalis, *Numerical Notation*, 55, 139.

The Greek Milesian system is precisely the initial object of study of this book and what could be called a *fully alphanumeric* writing system, that is, a system in which the same set of alphabetic signs is used both for everyday language and for mathematics. This and the other replicate alphanumeric systems were remarkably and unexplainably long-lived. They were regularly used for more than a thousand years across linguistic families (Indo-European, Semitic, Kartvelian, like Georgian) and religions.

In cases such as the Greek system, this might be partially explained by the political importance of the system's users, but this is hardly the case of smaller communities, like Armenian and Ethiopian; that they continued to use alphabetic numerals requires explanation. Chrisomalis suggests that alphabetic numerical notation systems, as the scripts they are, are conveyors of cultural identity.[15] There is no question that such persistence requires explanation and that it cannot be simply attributed to political causes. Perhaps, though, it is easier to find an answer by comparing it to the following statement by Menninger: 'In essence, letters are the embodiment of words, not of numbers.'[16] In this statement is embedded a conceptual limitation that is clearly revealed when contrasted with a truly alphanumeric understanding of the system.

Let us recall our previous chapter on the many dimensions of the στοιχεῖα from a 'grammatical' point of view, which did include basic qualities like the order of the alphabet, shared cosmological correspondences, references to the shapes of letters, and the following kind of exegesis: προτέτακται δὲ τὸ «α» ὅτι σημεῖόν ἐστι τῆς μονάδος, ἀρχὴ δὲ πρώτη ἀριθμοῦ ἡ μονάς – 'the alpha goes first because it is a sign of the unit, and the unit is the first principle of number.'[17]

In the light of such identifications, we could at least suspect that what Menninger's assertion does is point to an essential limitation of our contemporary concept of letter (or shall I say 'phoneme'? or 'element'?). We are so used to having separate notations for sounds and numbers that it does take an effort at estrangement or defamiliarization (the French *dépaysement*), to allow for an enlargement of our concept. In any case,

---

[15] *Ibid.*, 185–7.

[16] Menninger, *Zahlwort und Ziffer*, 67.

[17] Dionysius Thrax, *Dion. Thrax*, 381, 485.

here we are brought to a subtle distinction: as we paraphrase and affirm that 'in essence, Greek letters are the embodiment of sounds,' we have to wonder, 'how like the other sounds, the other words of a given language, are numbers? How special are numbers within language? *Zahlwort* and *Zahlsprache* – do they differ much from the ordinary *Wort* and *Sprache*?' We must remember that letters too have in Greek, as in Semitic languages, special names which are not just onomatopoeic: *alpha, beta, gamma…*, and perhaps they are comparable in their status to the names of numbers. Psychoyos is quite right to point out that to speak of an Ionic writing system and a Milesian numeral system as separate constructs misses the mark. These two systems were one united system for its users, who lived naturally between the phonetic and the arithmetical values of its signs. And indeed, grammar and linguistics may not be 'the best guides for one to study the emergence and evolution of the alphabet and other scripts. This should take place in the context of a wider semiotics of writing,'[18] which is precisely one of the possible ways to describe my approach to this topic in the following pages.

I shall return later to these questions that pertain to the heart of my enquiry, but before moving on, I need to turn the attention to a historically important phenomenon, isopsephism or systematic alphanumeric equivalence, which is and will be necessarily in the background throughout this chapter, if not throughout the entire research.

I. Isopsephism, Onomatomancy and Gematria

A scarcely attested term in Greek literature, ἰσόψηφος is synonym with the equally infrequent ἰσάριθμος,[19] and it means literally 'pebble-equal', thus going back to the etymology of 'calculation' (*calculus* = stone, pebble). As an adjective, ἰσόψηφος is applied to words in which the values of letters added together make up the same total, like ΝΟΜΟΣ (law) = ΑΡΙΘΜΟΣ (number) = 430, ΔΙΟΣ (of Zeus) = ΘΕΟΣ (deity) = 284; naturally anagrams will share the same value, like ΚΡΑΤΟΣ (strength) =

[18] Psychoyos, 'The Forgotten Art of Isopsephy', 208–209.

[19] See LSJ.

ΑΡΚΤΟΣ (a bear) = 691.[20] A famous example reported by Suetonius (*Nero* 39, 2)[21] is an indictment of the matricidal emperor,

Νέρων ἰδίαν μητέρα ἀπέκτεινε.

NERO = he slew his own mother.

where both sides of the equality total 1005.[22]

What takes place fundamentally in isopsephic practice is a *ratification*. The post-classical Latin verb, *ratificare*, 'to confirm, approve', has its precedent in the classical *ratum facere*, which means to make something 'fixed by calculation,'[23] *i.e.* confirmed as if by calculation, made unalterable, 'settled' in the very same sense that accounts are settled. The numerical calculation, as it were, endows meaning with the mathematical accuracy of the movement of the stars, which are *rati*.[24]

Such ἰσόψηφα, found in coins, sculptures, paintings and poems[25] are at the basis of ὀνοματομαντεία, a divination through names, or rather a divination of names,[26] whereby concepts are explained through numerical identity. The point, though, is not 'to find a coincidental equivalence between words. It means that there is a direct relationship between these words,'[27] recalling 'the meaning of "symbol" in the ancient world – objects that participated in and made present the person or object they symbolized.'[28] Hippolytus (*Haer.* 4.13) gives a detailed explanation of

---

[20] See examples in Dornseiff, *Alphabet*, 96ff.; W. Kroll, 'Onomatomanteia', in *RE*, vol. 18,1 (1939), 517–520; C. Luz, *Technopaignia, Formspiele in der griechischen Dichtung*, Mnemosyne Supplements. Monographs on Greek and Roman Language and Literature 324 (Leiden: Brill, 2010), 247–326.

[21] Quoted by F. Bücheler, 'Νεόψηφον', *Rheinisches Museum für Philologie* 61 (1906): 308.

[22] See extended examples, like isopsephic epigrams, in Psychoyos, 'The Forgotten Art of Isopsephy', 178–9.

[23] See *A Latin Dictionary*, ed. C. T. Lewis and C. Short (Oxford: Oxford University Press, 1966), *s.v. ratus* (hereafter cited as LS). Also *Glossarium mediæ et infimæ latinitatis*, ed. C. D. F. Du Cange (Niort: L. Fabre, 1883), *s.v. ratificatio* (hereafter cited as Du Cange).

[24] Cf. Cicero (*N.D.* 2, 37, 95): *astrorum rati immutabilesque cursus*.

[25] For some epigraphic examples and others in the *Anthologia Palatina*, see LSJ, *l.c.*

[26] See Kroll, 'Onomatomanteia'.

[27] G. Locks, *The Spice of Torah: Gematria / תורה וגמטריא* (New York: Judaica Press, 1985), xv.

[28] See J. Kalvesmaki, 'Reading the Early Christian Theology of Arithmetic: Methods

the procedure used, and he speaks of the practice as a 'Pythagorean reckoning' (Πυθαγορείος ψήφος) heeded by 'those who invent a serious philosophy' δι᾽ ἀριθμῶν καὶ στοιχείων, 'through numbers and letters', who believe they can 'prophesy by means of reckonings and numbers, letters and names' (διὰ ψήφων τε καὶ ἀριθμῶν, στοιχείων τε καὶ ὀνομάτων μαντεύεσθαι – 4.14), and also that they can 'discern life' (τὸ ζῆν διακρίνειν – 4.15).[29] It is remarkable that from the earliest datable mention of this practice in Greek literature (Iamblichus, *VP* 18, 147) there is an association with Pythagoras.[30]

Now, in order to see why and how ἰσοψηφία is relevant to our research, we need to steer clear of two distractions: 1) magical, oneiromantic and related occult literature, which has been for centuries the prolific and enthusiastic field of application of this technique; and 2) a facile superficial explanation of what is at work in the alphanumeric identity – or rather the 'alphanumeric equality'. Bücheler remarks how such were found everywhere and he calls the ἰσόψηφα *Spielereien*, 'amusements, play', and there is certainly a ludic dimension to them, which would partly explain why gematria has been called the 'spice of the Torah',[31] but like all traditional games, they were rooted in a cosmological worldview, in the symbolic correspondence mentioned above, and were thus considered a means of acquiring knowledge, usually knowledge transmitted upon initiation.[32]

This practice continued well into the Christianised Hellenic world, where entire isopsephic hymns[33] were not uncommon.[34] The most famous example of isopsephy in general is undoubtedly the 'Number of the Beast'

---

of Research and the Search for a Method', lecture presented 19/11/2002 at the Catholic University of America.

[29] Regarding the use of these techniques by astrologers (*mathematici*), and other relevant references, see A. García Molinos, 'Tipología de la adivinación en los papiros griegos mágicos' (PhD diss., Facultad de Filosofía y Letras, Universidad de Valladolid, 2014), 206.

[30] Dornseiff, *Alphabet*, 93.

[31] Locks, *The Spice of Torah*.

[32] See Luz, *Technopaignia*, 325.

[33] *Ibid.*, 292.

[34] Kalvesmaki has written extensively on this Christian aspect.

mentioned in Rev. 13:18, which was 'calculated' in various ways over the centuries.[35]

In any case, from our contemporary perspective, this technique of calculating the numerical values of words has inevitable esoteric and mystical connotations, partly due to the advent of a different system and the rupture of the alphanumeric connection, but mostly due to the prominence it acquired among Jewish and Muslim scholars, as גימטריה *gimaṭriyah*, derived from a Greek word, and in the Islamic world as حساب الجمل *ḥisāb al-jummal*, the 'reckoning of the total', and particularly among schools and individuals related to Kabbalists and Sufis, who would influence countless developments in the fields of magic, alchemy and other esoteric disciplines.[36] It must not be overlooked, however, that even today, within the Hebrew and Arabic-speaking communities, the practice of numerology (as generally labelled nowadays) retains an immediacy and a matter-of-fact presence that is easy to ignore from a Latin alphabetic worldview. From child-naming to toponyms, medicine and politics, the use of gematria is very alive on the streets of large parts of Africa and Asia.[37]

It would be all too easy to dismiss this survival as mere superstitious impulse, but returning to the open question about the longevity of alphanumeric notation, it may be possible to see a clearer cosmological reason for it. Indeed, if numbers and letters are interchangeable, arithmetic can be seen as an aspect of grammar, and any physical application of arithmetic 'makes sense' as a discourse does – numbers 'say' something. 'Medicine, astrology, and numerology were grounded on common assumptions

---

[35] Cf. Menninger, *Zahlwort und Ziffer*, II, 72 and, for a later occurrence, Victorinus Petavionensis, *Commentarii in Apocalypsin* (*Corpus Córporum*, University of Zurich), 119, 3.

[36] For an example of orthodox Halachic use in Judaism see L. Jacobs, *The Jewish Religion: A Companion* (Oxford: Oxford University Press, 1995), 182. Cf. also R. Patai, *The Jewish Alchemists: A History and Source Book* (Princeton University Press, 1994), 155.

[37] For examples from Israeli and Indonesian contexts, cf. M. Kravel-Tovi and D. Moore, *Taking Stock: Cultures of Enumeration in Contemporary Jewish Life*, The Modern Jewish Experience (Indiana University Press, 2016), 32, 71; C. Holt, *Culture and Politics in Indonesia* (Equinox Publishing, 2007), 81; and C. Leslie and A. Young, *Paths to Asian Medical Knowledge*, Comparative Studies of Health Systems and Medical Care (Berkeley: University of California Press, 1992), 261.

about the relationship between orders of reality, the relation of language to nature, and what is required if one is to have certain knowledge of anything.'[38] Some pages back I mentioned Chrisomalis' suggestion of a 'cultural identity' reaffirmation as a factor in preserving alphanumeric notation, but it may be more appropriate to consider the possibility of a deeper 'cultural' attachment, the attachment, or a natural inclination, to a worldview in which quantities 'speak' a human language, and literature can reach 'mathematical accuracy'. The crucial Greek word that condenses these meanings is of course λόγος, which 'in its mathematical sense of "relation, ratio, proportion", has been attributed to the Pythagoreans and to Pythagoras himself […] The sense "calculation" comes from the basic sense of the root λέγ- almost more directly than the sense "word".'[39] This inner identity within number has also been seen as an 'inner polarisation' of Pythagorean number which 'connects the quantitative with the qualitative domain'.[40]

*

Before moving on with my argument, and to illustrate the sometimes baffling complexity of this inner dynamic of the number-letters, I would like to present a relatively unknown Byzantine grammatical fragment.

1. Choeroboscus on the Names of Numbers

These lines are a good example of the semantic problems posed by the word στοιχεῖον, and they are directly related to the distinction between *Zahlwort* and *Ziffer*, the names of the numbers – or number-nouns – and their notation. Georgius Choeroboscus (*fl.* eighth–ninth century AD) is notable for his extensive use of earlier grammatical treatises and also for the influence of his works on later scholars.[41]

πᾶς ἀριθμὸς ἐντὸς τῶν στοιχείων θέλει ἔχειν στοιχεῖον ἐκ τῶν ἐντὸς τῆς δεκάδος·
Every number wants to have among its 'letters' a 'letter' from within the Decad.

---

[38] Leslie and Young, *Paths*, 260.

[39] W. Burkert, *Lore and Science in Ancient Pythagoreanism* (Cambridge, Mass.: Harvard University Press, 1972), 438, 440.

[40] See S. H. Nasr, *Science and Civilization in Islam*, 2nd ed. (Cambridge: Islamic Texts Society, 1987), 26.

[41] See Dickey, *Ancient Greek Scholarship*, 80.

ὁ εἷς ἀριθμὸς ἔχει τὸ ε, ὅπερ ἐκ τῶν ἐντὸς τῆς δεκάδος ἐστίν·
Number one (εἷς) contains ε, which is within the Decad.

πάλιν ὁ δύο ἔχει τὸ δ, ὅπερ ἐκ τῶν ἐντὸς τῆς δεκάδος ἐστίν·
Number two (δύο) contains δ, which is within the Decad.

πάλιν ὁ τέταρτος ἀριθμὸς ἔχει τὸ ε καὶ τὸ α, ἅτινα ἐκ τῶν ἐντὸς εἰσὶ τῆς δεκάδος·
The fourth number contains ε and α, which are within the Decad.

τὸ δὲ ὀκτὼ δοκεῖ ἀντικεῖσθαι, τοῦτο γὰρ οὐκ ἔχει στοιχεῖον ἐκ τῶν ἐντὸς τῆς δεκάδος·
Now, eight (ὀκτὼ) would seem not to comply, as it does not contain any 'letter' from within the Decad.

ἀλλ᾽ ἔστιν εἰπεῖν ὅτι δυνάμει ἔχει στοιχεῖα ἐκ τῶν ἐντὸς τῆς δεκάδος·
But it is possible to say that it does potentially contain 'letters' from within the Decad.

λέγουσι γὰρ οἱ φιλόσοφοι ὅτι παρὰ τὸ ἄγω δύο ἐστίν·
Because the philosophers say that it comes from 'I add two' (ἄγω δύο).

τὸ δὲ ἄγω δύο ἔχει στοιχεῖα ἐκ τῶν ἐντὸς τῆς δεκάδος· λέγω δὴ τὸ α καὶ τὸ γ, καὶ τὸ δ·
And ἄγω δύο does indeed comprise 'letters' from within the Decad, namely α, γ and δ.

ὀκτὼ γὰρ λέγεται παρὰ τὸ ἄγειν, δύο γὰρ τετράδας ἄγει·
This is because ὀκτὼ is said to be formed by addition, since it adds together two tetrads.[42]

One way of appreciating the subtlety of the semantic play here is to translate in a different way the first line, which is the key to the understanding of the whole passage: 'Every number-noun wants to have among its elements an element of the Decad.' We can see that the meaning of ἀριθμός here seems to be *Zahlwort*. As for στοιχεῖον, here it means 'letter' first, in ἐντὸς τῶν στοιχείων, 'among its letters', but then we have στοιχεῖον ἐκ τῶν ἐντὸς τῆς δεκάδος, where στοιχεῖον accords with the meaning of δεκάς, that is both 'the first ten numbers' and 'the first ten letters'. To be able to make sense of the passage, we need to enter for a moment the alphanumeric mentality, and to realise that 'the decad' (*viz.*

[42] G. Choeroboscus, *De orthographia (epitome)*, in *Anecdota Graeca e codd. manuscriptis bibliothecarum Oxoniensium*, ed. J. Cramer, repr. Amsterdam: Hakkert, 1963 (Oxford, 1835), 267.

10) means 'from ἄλφα to ἰῶτα' *at the same time* that it means 'from one to ten'.

*

Now, after such a good taste of the intricacies of alphanumeric notation, and thus brought to confront this duality of number which is either identity or inner polarisation, and still wondering at the possible reasons for the longevity of alphanumeric notation, we may embark on a wider examination of the Greek theory of number, hoping also to see more clearly how deep the alphanumeric duality goes.

B. Reckoning and Science of Numbers

A basic Greek distinction was mentioned by Plato between λογιστική and ἀριθμητική, the 'art of calculation' and 'the science of numbers,' or 'the art of reckoning' and 'the study of number', both disciplines sharing the same object of study, ἀριθμός.[43] A *locus classicus* is Plato's *Respublica* 525a9, λογιστική τε καὶ ἀριθμητικὴ περὶ ἀριθμὸν πᾶσα, 'reckoning and number theory are both solely concerned with number.'[44] The first one is more properly concerned with what is ἀριθμητόν, countable or numerable, as explained in a scholium to *Charmides* 165e2,

λογιστική ἐστι θεωρία τῶν ἀριθμητῶν, οὐχὶ δὲ τῶν ἀριθμῶν μεταχειριστική, οὐ τὸν ὄντως ἀριθμὸν λαμβάνουσα, ὑποτιθεμένη τὸ μὲν ἓν ὡς μονάδα, τὸ δὲ ἀριθμητὸν ὡς ἀριθμόν, οἷον τὰ τρία τριάδα εἶναι καὶ τὰ δέκα δεκάδα·

Reckoning is the study of what is countable, and it does not deal with numbers, as it does not use number *per se*, but rather uses 1 as if it were the Monad, the countable as if it were the number, taking 3 for the Triad and 10 for the Decad.[45]

But the perception of this duality of number is considered an achievement in the study of mathematics, and by no means a given or a starting point. Initially, as summed up by Fowler, 'within the surviving Greek classical

---

[43] See D. H. Fowler, 'Ratio in Early Greek Mathematics', *Bulletin of the American Mathematical Society* 1, no. 6 (1979): 808 and J. Gow, *A Short History of Greek Mathematics* (Cambridge: Cambridge University Press, 1884), 22.

[44] See also *Resp.* 259e1ff.

[45] *Scholia Platonica*, ed. by W.C. Greene (Haverford: American Philological Association, 1938)

mathematical tradition, number (*arithmos*) always denotes a positive integer.'[46] At first, following the progression in *Resp.* 524d, *arithmos* never appears to mean anything other than 'a definite number of definite objects', and yet theoretical arithmetic grows out of it, from the understanding that in the process of 'counting off', or 'reckoning' any objects, we make use of a prior knowledge of 'counting-numbers' which are already in our possession.[47]

The conception of 'pure' numbers (the object of ἀριθμητική), as opposed to visible or tangible numbers (the working tools of λογιστική), arises out of the natural phenomenon of counting, for 'it would indeed seem strange if there should be numbers of – nothing. How will he who is involved in "natural" counting and calculating become aware of these monads which are in no way to be touched or seen?'[48]

Klein finds these matters first treated explicitly as fundamental problems within Pythagorean and Platonic philosophy, and the following conceptual shift described: through the continual practice of counting and calculation, and the acquired familiarity with numbers and their operations – what Plato calls 'arithmetic and logistic art' – we are brought to ponder on those numbers we already possess before we begin counting or calculating, and which must be independent of the particular things which happen to be counted – of what are these the numbers? This question concerns the special nature of the object of arithmetic and logistic as that which alone of all things is in the strict sense knowable, being in fact always to some degree already known, *an object which has a purely noetic character and which exhibits at the same time all the essential characteristics of the countable* as such.[49]

Here we have come across another remarkable analogy between ἀριθμός and στοιχεῖον: they both seem to have a dual character which makes them readily perceptible and yet intangible, even transcendent. The

---

[46] Fowler, 'Ratio in Early Greek Mathematics', 809.

[47] See J. Klein, *Greek Mathematical Thought and the Origins of Algebra*, trans. E. Brann (Cambridge (MA): MIT Press, 1968), 7.

[48] *Ibid.*, 50, 77.

[49] Cf. *ibid.*, 49–50. It is most interesting to compare here Chomsky's view that what underlies both the human linguistic and arithmetical faculties is the same kind of computational complexity which is equipped to deal with discrete infinities; cited in Gvozdanović, 'Remarks on Numeral Systems', 1.

στοιχεῖα are notably sounds, the phonemes heard and readily understood, practically independent of their graphical notation, which can also be called στοιχεῖα. Now we see that numbers can be either the simple referents of counting or something else of 'purely noetic character'. Plato himself, through his theory of the *arithmoi eidetikoi*, 'eidetic numbers',[50] remained true to the Pythagorean tradition; indeed, the eidetic numbers might, in their foundational function, be compared to the Pythagorean arithmetical 'foundations' or πυθμένες, the coefficients of the powers of ten, as seen above.[51]

Nussbaum confirms, 'the most general sense of *arithmos* in ordinary Greek of the fifth century BC would be that of an ordered plurality of its members, a countable system or its countable parts.'[52] It may be remembered that τάξις is one of the basic qualities of the alphabetic series, and that in one of our grammarians we had encountered a very explicit and related association with number, when the Sicyonian soldiers ordered and numbered themselves.[53] The Pythagoreans were renowned for seeing the true grounds of worldly things in their countableness, since the condition of being a κόσμος, a 'world of beauty', is primarily determined by the presence of an ordered arrangement (τάξις).[54]

What comes to the fore repeatedly in these reflections and definitions, including the long passages of the *Metaphysics* devoted to criticise Plato's ideal numbers,[55] is the reference to the Pythagorean tradition, as when there was mention of the Pythagoreans looking after the shapes of the letters,[56] and of the Pythagorean lineage of isopsephy.[57]

---

[50] Known to us from the Aristotelian polemic against it (cf. above all *Metaphysics* M 6–8), and through later Platonist developments.

[51] Klein, *Greek Mathematical Thought*, 99, 137.

[52] M. C. Nussbaum, 'Eleatic Conventionalism and Philolaus on the Conditions of Thought', *Harvard Studies in Classical Philology*, no. 83 (1979): 90, echoed by C. Huffman, *Philolaus of Croton, Pythagorean and Presocratic: A Commentary on the Fragments and Testimonia with Interpretive Essays* (Cambridge: Cambridge University Press, 1993), 173, and cited by Roochnik ('Counting on Number', 546).

[53] See above p. 21.

[54] Klein, *Greek Mathematical Thought*, 66.

[55] See J. Annas, *Aristotle's Metaphysics: Books M and N*, Clarendon Aristotle Series (Oxford: Clarendon Press, 1976).

[56] Above, p. 21.

[57] Above, p. 44.

I shall now follow the direction of the references and turn my attention more specifically to Pythagorean number doctrines, particularly in their relation to physics and metaphysics.

C. Pythagoras and Pythagoreanism

It is becoming something of a truism to speak of an 'explosion' of Pythagorean-related scholarly literature,[58] and the field has been transformed so much in the last few decades that, in the words of Huffman,[59] 'the Pythagoras of current scholarship is not your mother's let alone your grandmother's Pythagoras.' He seemed to be taken for granted, to be 'one of the most familiar names among the Greek philosophers, one we are told very much and we know very little about,'[60] until with the 1962 publication of Burkert's *Weisheit und Wissenschaft: Studien zu Pythagoras, Philolaos und Platon*,[61] along with von Fritz's complementary article in the *RE*,[62] this field of studies received a powerful wake-up call to examine anew centuries of basic assumptions which had effectively become obstacles to a distinct vision of Pythagoras and Pythagoreanism.[63]

---

[58] Cf. P. S. Horky, *Plato and Pythagoreanism* (Oxford, New York: Oxford University Press, 2013), x, also *BNP*, *s.v.* 'Pythagoras' and related entries.

[59] C. Huffman, ed., *A History of Pythagoreanism* (Cambridge: Cambridge University Press, 2014), 1.

[60] See G. Cornelli, *In Search of Pythagoreanism: Pythagoreanism as an Historiographical Category*, Studia Praesocratica 4 (Berlin/Boston: Walter de Gruyter, 2013), vii, for the history of modern Pythagorean scholarship. L. Zhmud, '"All Is Number"? "Basic Doctrine" of Pythagoreanism Reconsidered', *Phronesis* 34, no. 3 (1989): 270–292 gives a succinct and engaging account.

[61] Revised and translated into English as *Lore and Science in Ancient Pythagoreanism*. Praise has been showered on this book from all quarters for decades. For one telling testimony from an earlier authority in the field, see K. von Fritz, review of *Lore and Science in Ancient Pythagoreanism*, by W. Burkert and E. L. Minar (tr.), *Isis* 65 (1974): 531–531, and his earlier K. von Fritz, review of *Weisheit und Wissenschaft. Studien zu Pythagoras, Philolaos und Platon*, by W. Burkert, *Isis* 55, no. 4 (1964): 459–461, where it is called 'a most energetic effort to solve the problems posed by a complicated and confused ancient tradition.' See also Cornelli, *In Search of Pythagoreanism*, 42.

[62] K. von Fritz, 'Pythagoras', in *RE*, vol. XXIV (1963).

[63] For the most up-to-date relevant references see in particular Huffman, *History*; Horky, *Plato and Pythagoreanism*; K. Saito, 'Mathematical Reconstructions Out, Textual Studies In: 30 years in the historiography of Greek mathematics', *Revue d'histoire*

Saito speaks of the 'blow of the epoch-making study' and 'dismantling the myth of origins' of Pythagoreanism. This reexamination keeps its momentum and has been extending its scope into later developments, trying to include everything that came to be labelled as Pythagorean over the centuries.[64] Also, because of the enduring influence of all sorts of 'Pythagorean' writings on Arabic literature, with ulterior ramifications into Hebrew literature and right into the European Middle Ages, the reassessment of Pythagoreanism is already having a wider impact on many areas of Islamic, Jewish and Medieval studies.[65] There is also a somewhat parallel line of Pythagorean scholars who in different degrees argue for a more 'inclusive'[66] view of the ancient and medieval material, and according to whom there is a respectable doctrinal continuity from the obscure origins of the Pythagoras myth down to the medieval Pythagorean apocrypha in various languages and all sorts of contexts.[67]

Nowadays, after all the sifting and winnowing, some scholars argue that there is no reliable evidence that Pythagoras was a mathematician, a shaman or anything, yet there is talk of a 'vague image' we still feel

---

des mathématiques 4, no. 1 (1998): 131–142; D. J. O'Meara, *Pythagoras Revived: Mathematics and Philosophy in Late Antiquity* (Oxford: Oxford University Press, 1990); and the bibliography in *BNP*, *s.v.* 'Pythagoras'. For a taste of a 'hyper-critical' position according to which 'aucun des fragments considérés comme authentiques par Walter Burkert et Carl Huffman ne possède une légitimité propre,' see L. Brisson, 'Platon, Pythagore et les Pythagoriciens', *Eikasia. Revista de Filosofía*, no. 12 (2007): 39–66.

[64] See L. Zhmud, 'What is Pythagorean in the pseudo-Pythagorean literature?', August 2015.

[65] For a recent partial overview with references to relevant sources, see A. Izdebska, 'The Attitudes of Medieval Arabic Intellectuals towards Pythagorean Philosophy: different approaches and ways of influence', in *Cultures in Motion: Studies in the Medieval and Early Modern Periods*, ed. A. Izdebski and D. Jasiński (Jagiellonian University Press, December 2014), 25–44.

[66] See Cornelli, *In Search of Pythagoreanism*, 192, and L. Zhmud, 'Mathematics vs Philosophy: An alleged fragment of Aristotle in Iamblichus', *Hyperboreus* 13, nos. 1–2 (2007): 77.

[67] In addition to some of Zhmud's works, which remain closer to scholarly consensus, two examples are P. Kingsley, *Ancient Philosophy, Mystery, and Magic: Empedocles and Pythagorean tradition* (Oxford: Oxford University Press, 1995) and A. Uždavinys, *The Golden Chain: An Anthology of Pythagorean and Platonic Philosophy* (Bloomington: World Wisdom, Inc, 2004). Thomas Taylor, 'the Platonist' (1758–1835) may also be mentioned as an important precedent of this view.

compelled to flesh out.[68] The words of a recent reviewer of Huffman's anthology appear very apt: 'we cannot give a sufficient account or express a valuable analysis of Pythagoreanism without dealing with the interpretations and the judgments of ancient and contemporary interpreters. Comprehension of Pythagoreanism, in fact, necessarily passes through the reading of late sources and through the understanding of a constantly renewed interest – differently motivated in different eras – in the figure of Pythagoras and in his doctrines.'[69] Cornelli recalls Guthrie's 'bottomless pit of research on the Pythagoreans', steps back somehow and issues what seems to be a balanced overview of the latest research, arguing against an 'overly presentist view of ancient philosophy', and explaining why there is no need to 'choose between an acousmatic and a mathematical Pythagoreanism.'[70]

But let us take Burkert as point of departure, and attempt a summary of the current views on 'Pythagoras the arithmetician' while availing ourselves of the wealth of recent scholarship.

1. Lore & Science *and Further Developments*

The declared primary purpose of this work was to determine, among the variegated mass of the Pythagorean tradition, what can be considered original Pythagorean, and what is either interpretation, be it Platonic, Aristotelian, Neo-Platonic, or addition and attribution by later authors.

Burkert starts by noting how the earliest reliable evidence for Pythagorean literature, and by far the most influential, is, by one of the curious turns of the history of philosophy, found in the Corpus Aristotelicum. Historical passages like the one in *Metaphysics* A had a decisive role in defining later views, and it is known that there were additionally some writings specifically on the Pythagoreans which were lost.[71] The thrust of the Aristotelian accounts accumulates until a fundamental stumbling block is identified: ultimately 'the Pythagorean doctrine cannot be expressed in Aristotle's terminology' (Burkert, *L & S*, 45).

---

[68] See Huffman, *History*, 4, 24ff.

[69] G. De Cesaris, review of *A History of Pythagoreanism*, by C. Huffman, *International Plato Journal*, December 2014: 101–103.

[70] Cornelli, *In Search of Pythagoreanism*, 192, 196.

[71] Regarding these, and their fragmentary transmission by later authors, see *inter alia* Horky, *Plato and Pythagoreanism*, 3.

Finally, the conclusion is reached that 'already in the earliest evidence available two conceptions of Pythagorean philosophy are in sharp contrast with each other' (p. 79):

1– the Aristotelian one, which aside from its own occasional contradictions tends to posit a divide or a clear break between Pythagorean and Platonic doctrines, and

2– the non-Aristotelian, Old Academy one, traced back to Speusippus, which is the older of the two.

This latter one 'equates Pythagoreanism with the doctrines of the *Timaeus* and with the Platonic number philosophy: The highest principles, immaterial, are the One and the Indefinite Dyad; from them come the pure, incorporeal numbers; the numbers produce the pure geometrical shapes, line, plane, and solid, as well as the perceptual functions of the "Living Creature Itself"; from the mathematical regularity of the regular polyhedra come the elements and therewith the multifariousness of the empirical world; and this whole process takes place, in this order, *only in thought*, which traces back changeless Being to its ultimate principles and understands it by means of them' [my highlighting]. Since 'this Academy tradition with its "derivation system" must be considered to be actually Old Academy' (p. 82), when we study the Old and Middle Academy we are actually studying what for centuries has been labelled Pythagoreanism. There is accordingly no need of obscure far-fetched sources or *testimonia*, since there are no Pythagorean *ipsissima verba*. We are left reassured that the cosmology of *Timaeus* and other dialogues where 'theoretical arithmetic' is introduced, are very likely the continuation of a real Pythagorean doctrinal thread.

Now, if we still try to go back to the earliest sources in a quest for the *authentic* Pythagorean texts, the fragments of Philolaus (probably written some time before 400BC) are especially important as the most likely to convey original Pythagorean contents. They are also of especial interest to us because they treat of number theory and cosmology, while those of Archytas, which are second in likelihood of authenticity, deal more with other topics like acoustics (pp. 22 and 267). In fact, one of the very tangible effects of Burkert's insights was a renewed interest in Philolaus and Archytas, with several monographic works dedicated to them over the last few decades.[72]

---

[72] See Huffman, *Philolaus*; and C. Huffman, *Archytas of Tarentum: Pythagorean, Philosopher and Mathematician King* (Cambridge: Cambridge University Press, 2010).

Before having a closer look at Philolaus, I shall comment on some of the above findings:

– A sort of 'Pythagorean' arithmetical genealogy or philosophical lineage appears to come into view, starting from an undecidable legendary origin with Pythagoras,[73] then first established in the fragments of Philolaus and Archytas, and adopted by Plato, mostly in his *Timaeus*, to be thereafter scattered to the four intellectual winds, as it were, through the later Academy and subsequent Neo-Platonic developments. In all this, Aristotle is the witness *par excellence*.

– The mention of the two highest principles, One and Dyad,[74] is an opportunity to set further limits to this enquiry: while it seems inescapable that a logical reduction to last principles will yield a binary system,[75] my current research has boundaries, an 'alphabetic constraint', meaning that we need a minimal number of elements which can function in combination as conveyors of human language. This consideration – what is the minimal working alphabet – opens onto a vast and tangential field of studies that is mostly within the ken of system theory, computer science, logic architecture and similar. For a taste of such, the question might be translated as 'how many symbols do we need for obtaining computational completeness?'[76] I am not letting go unnoticed the interesting connections that suddenly crop up: computing (λογιστική), logic, architecture, but I shall also not dwell on them. What is important to observe now is to consciously refrain from discussing further the ultimately basic 'complete' system of elements, which would be binary, to draw a line there, and so to stay on the level of what should then be strictly considered an

---

There are also more recent chapters on the same two philosophers by D. W. Graham and M. Schofield respectively, in Huffman, *History*.

[73] Let us remember that Pythagoras was the 'son of Hermes' (DL II, 126).

[74] Corresponding to odd/even or limited/unlimited, in other contexts; see below.

[75] As Leibniz explained (see G. W. Leibniz, 'Explanation of Binary Arithmetic', trans. and edited by Lloyd Strickland, 2007) in relating it to the Chinese binary principles of the 64 hexagrams of the *I Ching*.

[76] See A. Alhazov, R. Freund and M. Oswald, 'Tissue P Systems with Antiport Rules and Small Numbers of Symbols and Cells', in *Developments in Language Theory, 9th International Conference* (Springer, 2005), 101. Closer to us, R. Lehmann, '27-30-22-26 - How Many Letters Needs an Alphabet? The Case of Semitic', in *The Idea of Writing: Writing Across Borders*, ed. A. de Voogt and J. Quack (Leiden: Brill, 2012), 11–52, has reflected on a similar issue within the context of Semitic alphabets.

'intermediary' level, where we shall deal with perhaps ten elements (the Decad), or sixteen (the number of letters of the primordial Greek alphabet), or twenty-two, twenty-four or twenty-eight, like the letters of the Hebrew, later Greek and Arabic alphabets.

– The progression from incorporeal numbers to pure geometrical shapes to the elements – and all this *only in thought* – sets further the scene for the interplay of our alphabetic principles, and we shall keep it in mind for comparison with other sources.

2. Imitation or Participation

'In the Hippocratic writings the relation between microcosm and macrocosm becomes a matter of "imitation", but this imitation may be turned either way.' The body imitates the cosmos and parts of the cosmos imitate human organs. '*Imitation is a two-sided correspondence*.' 'Nothing more is meant than the correspondence of cosmos and number, in the sense that one explains and illuminates the other.'[77] This is compared by Burkert to the very important passage in *Metaph.* 987b which is used as an argument in 'all attempts to prove a Pythagorean origin of the theory of ideas':

οἱ μὲν γὰρ Πυθαγόρειοι μιμήσει τὰ ὄντα φασὶν εἶναι τῶν ἀριθμῶν, Πλάτων δὲ μεθέξει, τοὔνομα μεταβαλών. τὴν μέντοι γε μέθεξιν ἢ τὴν μίμησιν ἥτις ἂν εἴη τῶν εἰδῶν ἀφεῖσαν ἐν κοινῷ ζητεῖν.

Pythagoreans say that things exist by 'imitation' of numbers, whereas Plato says that they exist by 'participation' – merely changing the term. As to what this 'participation' or 'imitation' of the forms may be, they apparently gave up on the question.

I may recall here those passages in the grammatical survey where the letters are said to relate κατὰ μίμησιν to the four elements, or also to the twenty-four hours of day and night, and more specifically, the seven vowels to the seven planets. The question posed in those cases is the same mentioned by Aristotle: how are we to understand this μίμησις? The enormity of the gap between the two possibilities reported by Aristotle, namely μιμήσει and μεθέξει, has been explored many times,[78] and the many interpretative possibilities of the simple term μίμησις alone have also given rise to countless pages, including notably in the field of aesthetics, for art can be conceived as essentially μίμησις, and the artists

---

[77] Burkert, *L & S*, 44–45.

[78] Cf. Horky, *Plato and Pythagoreanism*, 32, 46, 255.

as copyists. The original meaning of the word referred to the liturgical actions of the sacrificial priest, *i.e.* dance, music, song.[79] 'True "imitation" is not a matter of illusory resemblance (ὁμοιότης) but of proportion, true analogy, or adequacy (αὐτὸ τὸ ἴσον, *i.e.*, κατ᾽ ἀναλογίαν)';[80] the geometric, mathematical connotation is unmissable.

3. On Creation and Order

'Pythagoras says that the cosmos is a created thing in the realm of thought but not in that of time (κὰτ᾽ ἐπίνοιαν οὐ κατὰ χρόνον).'[81] Aristotle dismisses offhand this Pythagorean doctrine as absurd, but it appears in later literature as Pythagorean, and it agrees with the cosmology of *Timaeus*, and with the important doxographical statement that Pythagoras coined the term 'cosmos', ἐκ τῆς ἐν αὐτῷ τάξεως, 'because of the order in it.'[82]

The association of Pythagoras with the henceforth allied concepts of 'universal orderly beauty' (κόσμος) and 'sequential order' (τάξις), established from early on a sort of conceptual amalgam that would be perpetuated through the Middle Ages. The intemporal and conceptual character of this creation, this universe and this order is to be related to the immaterial aspect of letter and number in their intrinsic duality.

Discussing Philolaus' theories, Burkert observes: 'the Greek word ἀριθμός is not completely equivalent to the modern concept of "number". Ἀριθμός is always a whole number, and tied up with the actual process of counting. Thus it is closely connected with things, and in fact is itself a thing, or at least an ordering of things. Ἀριθμός means a *numerically arranged system, or its parts*.'[83] This is in direct relation to the alphabet and the letters, as I shall have occasion to review in coming pages.

---

[79] W. Tatarkiewicz, *A History of Six Ideas: An Essay in Aesthetics*, Melbourne International Philosophy Series 5 (The Hague/Boston/London: Martinus Nijhoff, 2012), 266.

[80] See 'Imitation, Expression and Participation' in A. Coomaraswamy, *Selected Papers 1: Traditional Art and Symbolism*, ed. R. Lipsey, Bollingen Series 89 (Princeton: Princeton University Press, 1977), 276ff. and a recent criticism, A. Chakrabarti, *The Bloomsbury Research Handbook of Indian Aesthetics and the Philosophy of Art*, Bloomsbury Research Handbooks in Asian Philosophy (Bloomsbury Publishing, 2016), 73-4.

[81] Aëtius, 2.4.1.

[82] Burkert, *L & S*, 71, 77.

[83] *Ibid.*, 265 – my highlighting.

4. The Pythagorean Logos

The term λόγος, in its mathematical sense of 'relation, ratio, proportion', has also been attributed to the Pythagoreans and to Pythagoras himself. Its original meaning would be the one it has in musical theory: the numerical ratio in an interval, thus with obvious parallels in geometry, where ratios determine angles and shapes. 'Thus the *logos* would be "the group or bundle of numbers that lie hidden in a thing", by use of which it can be not only described but reproduced.'[84] It is important to note, as mentioned above, that 'the sense "calculation" comes from the basic sense of the root λέγ- almost more directly than the sense "word".'[85] This observation about the original sense of λόγος is very important, and a serious invitation to think twice before routinely translating λόγος as 'word'. The consequences for the understanding of many 'doctrines of the λόγος' are wide and profound. For one remarkable example and by way of experiment, John 1:1 might be rendered: 'In the beginning was the proportion.'

5. The Fundamental Decad

'One is νοῦς and οὐσία, two is δόξα… ten is the perfect number, which comprehends the whole nature of number and determines the structure of the cosmos, and with it ends the symbolic interpretation of the numbers.'[86]

This text comes with a reference to *Metaph.* 986a8, where Aristotle is speaking about οἱ καλούμενοι Πυθαγόρειοι. I quote part of the passage because it is also a fundamental reference for this work:

τὰ τῶν ἀριθμῶν στοιχεῖα τῶν ὄντων στοιχεῖα πάντων ὑπέλαβον εἶναι, καὶ τὸν ὅλον οὐρανὸν ἁρμονίαν εἶναι καὶ ἀριθμόν.	they assumed *that the elements of numbers are the elements of all things*, and the entire heaven to be a harmony or number.
τέλειον ἡ δεκὰς εἶναι δοκεῖ καὶ πᾶσαν περιειληφέναι τὴν τῶν ἀριθμῶν φύσιν	the decad is considered to be something perfect and to comprise the whole nature of the numbers.

---

[84] Burkert, *L & S*, 438.

[85] *Ibid.*, 440; see also Lohmann, 'Mathematik und Grammatik', 310, where the arithmetical meaning of ὄνομα is mentioned as well.

[86] Burkert, *L & S*, 467–68.

This characterisation of Pythagorean number doctrine is later complemented in 986a15ff.,

φαίνονται δὴ καὶ οὗτοι τὸν ἀριθμὸν νομίζοντες **ἀρχὴν εἶναι καὶ ὡς ὕλην** τοῖς οὖσι καὶ ὡς πάθη τε καὶ ἕξεις, τοῦ δὲ ἀριθμοῦ στοιχεῖα τό τε ἄρτιον καὶ τὸ περιττόν, τούτων δὲ τὸ μὲν πεπερασμένον τὸ δὲ ἄπειρον, τὸ δ' ἓν ἐξ ἀμφοτέρων εἶναι τούτων (καὶ γὰρ ἄρτιον εἶναι καὶ περιττόν), τὸν δ' ἀριθμὸν ἐκ τοῦ ἑνός, ἀριθμοὺς δέ, καθάπερ εἴρηται, τὸν ὅλον οὐρανόν.

These thinkers obviously consider *number to be a first principle, and like material for things* and as constituting their conditions and states. The elements of number are the Even and the Odd; of these the former is limited and the latter unlimited. The unity consists of both (since it is both odd and even); number is derived from the unity; and numbers, as we have said, are the entire heaven.

Regarding this concept of numbers as ὕλη, what might be called the basis of a Pythagorean physics, it is useful to recall one of the fragments attributed to Theano, the legendary wife (or daughter) of Pythagoras himself, who sheds further light on the previously mentioned question of the 'participation' or 'imitation',

Καὶ συχνοὺς μὲν Ἑλλήνων πέπυσμαι νομίσαι φάναι Πυθαγόραν ἐξ ἀριθμοῦ πάντα φύεσθαι. αὐτὸς δὲ ὁ λόγος ἀπορησίας ἔχεται, πῶς ἃ μηδὲ ἔστιν ἐπινοεῖται καὶ γεννᾶν. ὁ δὲ οὐκ ἐξ ἀριθμοῦ, κατὰ δὲ ἀριθμὸν ἔλεγε πάντα γίγνεσθαι, ὅτι ἐν ἀριθμῷ τάξις πρώτη, ἧς μετουσίᾳ κἀν τοῖς ἀριθμητοῖς πρῶτόν τι καὶ δεύτερον καὶ τἄλλα ἑπομένως τέτακται.

I have learned that many of the Greeks believe Pythagoras said all things are generated from number. The very assertion is puzzling: how is it conceivable that something inexistent will nonetheless engender and produce? But he did not say that all things come to be *from* (ἐξ) number; rather, *in accordance with* (κατὰ) number – on the grounds that order holds the primacy within number, and it is by a communion with order that a first and a second and the rest are assigned sequentially to what is countable.[87]

In other words, this striking 'communion', like the controversial 'participation', would refer not to a *material continuity*, but to a *sequential analogy*, which brings once again to the fore the crucial role of τάξις, order, and gives a glimpse into the elusiveness of its ontological status. What is the place of τάξις in the hierarchy of being?

Regarding the decad, Schofield considers the Pythagorean influence on even such an Aristotelian trademark as the ten categories. In view of

[87] H. Thesleff, ed., *The Pythagorean Texts of the Hellenistic Period* (Turku: Åbo Akademi, 1965), 195.

passages like the above, he observes: 'if the *Categories* insists that there are just ten basic categories through which we can articulate reality, the treatise surely must have a pedigree in Pythagorean teaching on number as principle of all things, and on ten as the perfection and completion of the number series.'[88]

Finally, Burkert sums up the Pythagoreans view: 'Number is not quantity and measurability, but *order and correspondence*, the articulation of life in rhythmical pattern, and the perspicuous depiction of the whole as the sum of its parts. To see a "consistently quantitative view of the world" in Pythagorean number theory is a mistake.'[89] This concept of number is certainly closer to a language than to what we know as arithmetic and mathematics.[90]

I. Philolaos

The extraordinary significance of Philolaus for this book is due to the fact, now established by Burkert and Huffman, that the Pythagorean theory described and criticized by Aristotle is in most cases that of Philolaus, and that in fact, we know of no philosophical/scientific, cosmological views of Pythagoreans before those of Philolaus. Cornelli, though adding some temperating comments, concludes that Philolaus' doctrine is 'the *solution* to the problem of attributing a doctrine of "all is number" to ancient Pythagoreanism, in epistemological, ontological and numerological dimensions,' and even more decisively, that 'Philolaus can be considered the solution to our problem: ancient Pythagoreanism, or at least fifth-century Pythagoreanism, did hold the doctrine of "all is number", whether in a mystical or epistemological sense.'[91] It was through the public philosophical activities of Philolaus that the hitherto 'shadowy' world of Pythagorean lore emerged into daylight and became part of the Greek

---

[88] M. Schofield, 'Archytas', chap. 3 in *A History of Pythagoreanism*, ed. C. Huffman (Cambridge: Cambridge University Press, 2014), 79–80.

[89] Burkert, *L & S*, 477.

[90] For more on this topic in its relation to the abacus, and including the remarkable preservation of certain aspects of 'medieval number' in our system of double-entry bookkeeping, see A. Heeffer, 'On the curious historical coincidence of algebra and double-entry bookkeeping', in *Foundations of the Formal Sciences VII: bringing together philosophy and sociology of science*, vol. 32 (College Publications, 2011), 125.

[91] Cornelli, *In Search of Pythagoreanism*, 184, 187.

philosophical conversation. In this transformation it is likely that Philolaus played the role of inventor of 'Pythagorean' philosophy more than of transmitter, and this may be the reason why Aristotle often referred to them in general as οἱ καλούμενοι Πυθαγόρειοι, 'the so-called Pythagoreans'.[92]

In the following lines I present and comment on those fragments of Philolaus which are relevant to my enquiry into the nature of ἀριθμός. Regarding the authenticity or spuriousness of the fragments, Huffman's *Philolaus*, cited above, can be considered the current authoritative account.[93] Given that this enquiry is not so much concerned with 'canonic' philological Pythagoreanism as with the history and influence of one particular Pythagorean concept, I shall widen the scope to include within my selection some of the spurious or doubtful fragments; after all, they too were for many centuries received and transmitted as veritable Pythagorean teachings, contributing to the Medieval view of ancient philosophy.[94]

1. Fragments of Philolaus

FRAGMENT 4 (authentic)

καὶ πάντα γα μὰν τὰ γιγνωσκόμενα ἀριθμὸν ἔχοντι· οὐ γὰρ οἷόν τε οὐδὲν οὔτε νοηθῆμεν οὔτε γνωσθῆμεν ἄνευ τούτου.

Everything we are perceiving now is with number – for it is not possible that anything at all be understood or known without it.

If, as has been suggested by the specialists, Philolaus is the 'mathematical' Pythagorean *par excellence*, then this fragment, along with 11, must surely be at the very basis of the ever popular perception of Pythagoreanism as the doctrine that 'all is number', or 'everything is number,' as reported and immortalised by Aristotle.[95] My translation is an effort to make the most of the crucial ἔχοντι (Attic ἔχουσι), in the sense brought out by Huffman himself but not reflected in his translation of the fragment, 'the sense of being constituted by an ordered plurality in some sense.' My

---

[92] E.g. *Metaph.* A8 989b29. See D. W. Graham, 'Philolaus', chap. 2 in *A History of Pythagoreanism*, ed. C. Huffman (Cambridge: Cambridge University Press, 2014), 48.

[93] Latest views in Huffman, *History*, especially chapters 2 and 8.

[94] Cf. the defining role played by the Christian apocrypha on Medieval and Renaissance arts. See J. Goethals, V. McGuire and G. Zhang, *Power and Image in Early Modern Europe*, EBSCO ebook academic collection (Newcastle: Cambridge Scholars, 2009), 98–9.

[95] Cornelli, *In Search of Pythagoreanism*, 137, gives thorough lists of Aristotle's mentions. Cf. also Graham, 'Philolaus', 54.

intended meaning for 'being with number' instead of the rather vague 'having', relies partly on the opposition to ἄνευ, and it is close to that of a woman 'being with child', thus close to the Hippocratic example mentioned by Huffman, where lame parents are said to be able to produce healthy offspring because 'the lame part has the same number as the healthy part,' with reference to the proper *constitution* of the body by the four humours.[96]

The other main aspect of the fragment is the epistemological one. We have three words related to cognition, namely γιγνωσκόμενα, νοηθῆμεν, and γνωσθῆμεν (the latter two are passive infinitives). I have brought out the present tense of γιγνωσκόμενα as a deliberate contrast to the gnomic second part of the fragment, for which I keep Huffman's wording almost intact. Zhmud translates 'All that is cognizable, certainly has number. For it is impossible for us to think or perceive something without this.'[97] Nussbaum speaks of the 'close association between numerability and knowability',[98] and it is along this epistemological line that the fragment is interpreted by most. There is no question of the epistemological import of the text, but it is important to keep in mind, with Viltaniotis, that 'many examples in Greek thought show that the concept of number refers to something far more complex than an "ordered plurality,"'[99] and that, 'if it is impossible for a thing to be known without number, this is because it is impossible for a thing to *be* what it is without number,' for 'it is number, along with the basic powers to limit and to be limited, which makes things what they are.'[100] In other words, and quite along the lines of the Latin concept of *realitas* (from *reor*, what 'I think'), here epistemology is ontology.[101]

I would also take note of Viltanioti's assertion that 'number has a

---

[96] Huffman, *Philolaus*, 175, my italics.

[97] Zhmud, '"All Is Number"?', 275.

[98] Nussbaum, 'Eleatic Conventionalism', 91.

[99] I.-F. Viltanioti, 'Powers as the Fundamental Entities in Philolaus' Ontology', *Journal of Ancient Philosophy* VI, no. 2 (2012): 21.

[100] *Ibid.*, 22, my italics.

[101] Leaving aside for the moment Semitic parallels, cf. the popular etymology that relates *think–thing*, or Ger. *denken–Ding* (*e.g.* S. Urban [Cave, Edward], 'English Grammar and English Grammarians', *The Gentleman's Magazine* (London) 14 (1840): 477), and see Cassin, *Dictionary of Untranslatables*, 901.

precise metaphysical role in Philolaus' system, and that this role is to be understood in close connection to the role of *harmony*, the third principle without which it would have been impossible for limiters and unlimiteds to be fitted together.'[102]

This 'harmonic' aspect, finally, is related directly to an intersecting area of Pythagoreanism that we shall henceforth encounter repeatedly, that of musical theory, in which the identity between perceptibility and intelligibility – or 'number' as substantial structure and 'number' as enabler of cognition – mutes the dichotomy by its being 'heard'; as Hicks observes, the octave is 'the sense-perceptible manifestation of the ratio 2:1', and 'the point is simple: who would deny that the octave sounds consonant?'[103] It is not difficult to surmise, in this light, that probing the depths of the 'bottomless pit' may require in the first place a salutary dose of music.

Wer den Dichter will verstehen
Muss in Dichters Lande gehen.[104]

FRAGMENT 5 (spurious)

ὅ γα μὰν ἀριθμὸς ἔχει δύο μὲν ἴδια εἴδη, περισσὸν καὶ ἄρτιον, τρίτον δὲ ἀπ᾽ ἀμφοτέρων μειχθέντων ἀρτιοπέριττον· ἑκατέρω δὲ τῶ εἴδεος πολλαὶ μορφαί, ἃς ἕκαστον αὐτὸ σημαίνει.	Number has two distinct forms, odd and even, and a third compounded of both, the even-odd. Each of the two forms has many manifestations which are shown by every separate thing.[105]

This fragment tells us about the two fundamental types of number and, most importantly, about the central relation between numbers and things.

---

[102] Viltanioti, 'Powers as the Fundamental Entities', 22, my italics.

[103] A. Hicks, 'Pythagoras and Pythagoreanism in Late Antiquity and the Middle Ages', chap. 20 in *A History of Pythagoreanism*, ed. C. Huffman (Cambridge: Cambridge University Press, 2014), 427.

[104] *Whoever wishes to understand the poet/ Must go into the poet's land.*
Goethe, *West-östlicher Divan*, 241.

[105] My translation follows mostly the interpretations of M. E. Hager, 'Philolaus and the Even-Odd', *The Classical Review* (Cambridge, UK) 12, no. 1 (March 1962): 1 (not discussed by Huffman), and J. Mansfeld, ed., *Die Vorsokratiker*, 2 vols. (Stuttgart: Reclam, 1983/1986), I, 153 (hereafter cited as RV) while making use of Huffman's emendation of αὐταυτὸ, *Philolaus*, 192.

To rephrase and thus elaborate on the text: Every single thing[107] shows, is a sign of, hints at (σημαίνει), the multiple manifestations or shapes (μορφαί) of the two distinct forms, kinds, species (εἴδη) of number. That is, every single thing gives signs of its kinship to either even or odd number, not directly but as if in a second degree, through their manifestations (numbers, perhaps?). The famous Orphic pun reported in Plato's *Cratylus* (400b9ff.), σῶμα σῆμα, 'the body is a tomb,' or also 'the body is a token,'[108] can shed some light for us on Philolaus' meaning here: things are tokens of the varieties of odd and even, bespeaking the latent 'forms' as the body reveals the character and movements of the soul, or as a tomb indicates the resting place of a body. Restricting ourselves to the wording of the text, this fragment might be said to speak unequivocally of a *semantic* relation between reality and numbers.

The mention of *Cratylus* is hardly casual, since this dialogue is the prime reference for the discussion of the relation between a system of signs and reality. It is indeed remarkable that no Platonic discussion is found regarding the relation between numerical notation and number, and this might be due to the common use of letters as numerical notation.

FRAGMENT 11 (almost certainly spurious)[109]

From a philological point of view, as Huffman observes, 'There is a great deal both in the style and content of the fragment that links it to the philosophy of the early Academy and the later tradition of Platonism, while virtually nothing that accords with what one would expect from a Presocratic author.'[110] This is quite convenient for us as we are interested in tracing the continuity of the doctrines rather than the soundness of the attribution; and indeed there are several doctrinal threads in this long fragment which are worth noting.

---

[107] This interpretation of ἕκαστον αὐτό seems to agree with at least two similar uses we have found in Arist. *SE* 181b13, and Proclus *Theol.Plat.* II, 1, and it would corroborate Huffman's emendation.

[108] Cf. A. Bernabé, 'Una etimología platónica: σῶμα-σῆμα', *Philologus - Zeitschrift für antike Literatur und ihre Rezeption* 139, no. 2 (1995): 204–237; also the careful discussion of σημαίνω in F. Ademollo, *The Cratylus of Plato: A Commentary* (Cambridge University Press, 2011), 157ff.

[109] On its authenticity, see Huffman, *Philolaus*, 349–50.

[110] See *Philolaus*, 349.

θεωρεῖν δεῖ τὰ ἔργα καὶ τὴν οὐσίαν τ�ῶ ἀριθμῶ καττὰν δύναμιν ἄτις ἐστὶν ἐν τᾶι δεκάδι· μεγάλα γὰρ καὶ παντελὴς καὶ παντοεργὸς καὶ θείω καὶ οὐρανίω βίω καὶ ἀνθρωπίνω ἀρχὰ καὶ ἀγεμὼν κοινωνοῦσα [***][111] δύναμις καὶ τᾶς δεκάδος. ἄνευ δὲ τούτας πάντ᾽ ἄπειρα καὶ ἄδηλα καὶ ἀφανῆ.

The functions and essence of number must be considered in the light of the power inherent in the decad, for it is great, utterly perfect, utterly effective, and it is the joint principle and directing force of divine, celestial, and human life. Without it, everything is undefined, unclear, and indiscernible.

We had already come across passages in praise of the decad, and what we have here might be one of the very first and influential examples of this mysterious veneration. Mysterious because from a strictly mathematical point of view, the decad has no extraordinary features that would warrant such a high esteem. The common current mathematical view is that 'the use of ten as the base goes back to the dawn of civilisation, and is attributed to the fact that we have ten fingers on which to count.'[112] Now, it may be precisely this kind of cosmic correspondence which is at the basis of the Pythagorean doctrine, not something arithmetically intrinsic to the number ten, but rather the accumulation of perceived correspondences in nature and, thinking of Aristotle's categories, also in the synthetic power found in decadic configurations. The epistemological importance attributed to number in the previous fragment, is here particularised to the number ten, and emphasised in the following paragraphs.

In relation to this aspect, fr. 20b[113] gives an oft-repeated etymology of the decad: 'δεχάδα προσηγόρευσεν, ὡς δεκτικήν τοῦ ἀπείρου' – he [Philolaus] called it a 'receiver', because it is receptive of the unlimited.

γνωμικὰ γὰρ ἁ φύσις ἁ τῶ ἀριθμῶ καὶ ἡγεμονικὰ καὶ διδασκαλικὰ τῶ ἀπορουμένω παντὸς καὶ ἀγνοουμένω παντί. οὐ γὰρ ἦς δῆλον οὐδενὶ οὐδὲν τῶν πραγμάτων οὔτε αὐτῶν ποθ᾽ αὑτὰ οὔτε ἄλλω πρὸς ἄλλο, εἰ μὴ ἦς ἀριθμὸς καὶ ἁ τούτω οὐσία. νῦν δὲ οὗτος καττὰν ψυχὰν **ἁρμό-**

The originating nature[114] of number is conducive to knowledge, it is orientating and instructing of whatever be unsolvable or unknown. Indeed, if there were not number and its essence, nothing whatsoever would be clear to anyone, either on its own or in its relation to other things. As it is, by *adapting* in the soul

[111] Twelve letters missing here.

[112] A. Slinko, *Algebra for Applications: Cryptography, Secret Sharing, Error-Correcting, Fingerprinting, Compression*, Springer Undergraduate Mathematics Series (Springer International Publishing, 2015), 33.

[113] Not in DK; see Huffman, *Philolaus*, 352.

ζων αἰσθήσει πάντα γνωστὰ καὶ ποτάγορα ἀλλάλοις κατὰ γνώμονος φύσιν ἀπεργάζεται συνάπτων καὶ σχίζων τοὺς λόγους χωρὶς ἑκάστους τῶν πραγμάτων τῶν τε ἀπείρων καὶ τῶν περαινόντων.

all things to perception, number makes things known and commensurate to one another according to the nature of the criterion (γνώμων),[115] while it joins and cleanly splits the ratios of things, of the unlimited and the limiting.

There is in this paragraph a remarkable doctrine of knowledge through a harmonization between the human mind and external reality, and the harmonization is effected by what in this case sounds like a cosmic principle of equilibrium, the γνώμων. This *gnomon* means originally the style, or perpendicular, of a sundial, but its meaning expanded in early Greek science to signify any 'marker around which the intelligibility of other things is constituted.'[116] The reader will remember that the very first recorded occurrence of στοιχεῖον in Greek literature has to do with the sundial, and that its meaning there is 'the shadow cast by the dial to mark time.' I had suggested the symbolic implications of this image,[117] and this is what De Groot confirms, even though apparently unaware of the στοιχεῖον connection, in his interpretation of this passage: 'It is interesting that the *gnomon* is not the sign; the shadow is… *Gnomon*, the word, functions in much the same way that Aristotle uses the word *archê*. *Gnomon* does not separate thought and thing. It brings them closer together.'[118]

ἴδοις δέ κα οὐ μόνον ἐν τοῖς δαιμονίοις καὶ θείοις πράγμασι τὰν τῶ ἀριθμῶ φύσιν καὶ τὰν δύναμιν ἰσχύουσαν, ἀλλὰ καὶ ἐν τοῖς ἀνθρωπικοῖς ἔργοις καὶ λόγοις πᾶσι παντᾶ καὶ κατὰ τὰς δημιουργίας τὰς τεχνικὰς πάσας καὶ κατὰ τὰν μουσικάν.

You will find that the originating nature and power of number are compelling not only in angelic and divine matters, but also fully in every human practical and theoretical affair, in all the arts of the craftsman and in music.

---

[114] For the interpretation of φύσις as a dynamic whole of origin, process and result, see Viltanioti, 'Powers as the Fundamental Entities', 26.

[115] See D. Manolova, 'Discourses of Science and Philosophy in the Letters of Nikephoros Gregoras' (PhD diss., Doctoral School of History, Central European University, 2014), 196 and also T. L. Heath, *A History of Greek Mathematics*, 2 vols. (Oxford: Clarendon Press, 1921), I, 78.

[116] J. De Groot, *Aristotle's Empiricism: Experience and Mechanics in the Fourth Century BC* (Las Vegas, Zurich, Athens: Parmenides Publishing, 2014), 346–8.

[117] Above, p. 10.

[118] De Groot, *Aristotle's Empiricism*, 347. There is a remarkable analogy with the cosmic role of the Islamic balance, *al-mīzān*, which I shall address in later chapters.

This determining role played by number in practical creative activities such as the 'arts and crafts,'[119] is in this context a clear extension of the demiurgic and artistic nature of the cosmos itself, 'harmonised' as it is with the powers of the soul.

ψεῦδος δὲ οὐδὲν δέχεται ἀ τῶ ἀριθμῶ φύσις οὐδὲ ἁρμονία· οὐ γὰρ οἰκεῖον αὐτοῖς ἐστι. τᾶς τῶ ἀπείρω καὶ ἀνοήτω καὶ ἀλόγω φύσιος τὸ ψεῦδος καὶ ὁ φθόνος ἐστί. ψεῦδος δὲ οὐδαμῶς ἐς ἀριθμὸν ἐπιπνεῖ· πολέμιον γὰρ καὶ ἐχθρὸν τᾶι φύσει τὸ ψεῦδος, ἁ δ' ἀλήθεια οἰκεῖον καὶ σύμφυτον τᾶι τῶ ἀριθμῶ γενεᾶι.	No falsehood is admitted by the originating nature of number or by concord (ἁρμονία), for it is alien to them. Falsehood and envy belong to what is unlimited, unintelligible, and absurd. Falsehood can in no way foster number, which is by its originating nature contrary and inimical to falsehood, while truth is akin and cognate to the lineage of number.

Apart from the specification and repetition of the power of number in its different applications, the relation with veracity is noteworthy, and indeed related to the idea of the *gnomon* as a criterion and enabler of true knowledge. 'Number' and truth are kindred, οἰκεῖον καὶ σύμφυτον, connatural to each other, while number and falsehood are enemies.

FRAGMENT 23 (spurious)[120]

ἀριθμὸν εἶναι τῆς τῶν κοσμικῶν αἰωνίας διαμονῆς κρατιστεύοισαν καὶ αὐτογενῆ συνοχήν.	Number is the controlling and self-generating bond of the eternal continuity of the universe.

Alternatively, 'number is the conquering and self-subsisting cohesion of the eternal stay of things…'[121] The commanding or compelling nature of number is once again mentioned here, making of it a sort of universal power. Viltanioti speaks in this connection (fr. 11) of 'a power of connecting (κοινωνοῦσα), fitting together or combining (ἁρμόζων, συνάπτων), which is also the function of ἁρμονία.'[122]

*

[119] This seems an apt translation for δημιουργία καὶ μουσική.

[120] Huffman, *Philolaus*, 355.

[121] See A. L. Pierris, 'Pythagoreanism in the Meno and Platonic Development', in *Symposium Platonicum Therense* (Santorini, June 2001), 16.

[122] 'Powers as the Fundamental Entities', 25.

It is unclear what Philolaus had in mind with his limiters and unlimiteds: some suggest limiters are atoms, unlimiteds void, in a parallel to atomic theory; others take them as Aristotelian form and matter, respectively; or limiters could be odd numbers, and unlimiteds even numbers.[123] Perhaps they might be said to correspond to letters and numbers, and drawing a parallel we would think of letters as related to form, conveying meaning, while numbers would correspond to matter, 'fleshing out' the forms. Or maybe the distinction is the one between γράμματα and στοιχεῖα, letters and phonemes: letters, written, fixed, would be the limiters, while sounds, ungraspable, would be the unlimiteds. This is not unrelated to the famous passage about letters in *Philebus* (18b6ff.), where Plato seems to be drawing from Philolaus, and where the invention of letters out of the acoustic continuum by Theuth is an example of a science in which by 'having number,' that is, consisting of an ordered set of elements (στοιχεῖα, 'members of a series'), 'a subject matter can be learned and its elements applied to explain or manipulate the world.'[124]

Other fragments of Philolaus speak of the importance of the monad or the dyad, or number seven, but I shall retain the above selection for our purposes, and consider that in Philolaus we have had contact with the motherlode of 'arithmetic' Pythagoreanism. From here onwards I shall not dwell on the details of the transmission through the 'early Academy and the later tradition of Platonism,' as mentioned above by Huffman, but concentrate on particularly relevant examples, either because they deal with significant aspects of number theory or because they have been historically influential.

II. 'Pythagorean' Milestones

In order to trace down the centuries the idea that the intelligibility of the world depends on number, or even that in some way number sustains, rules or constitutes the order of the universe as we know it, and if we are based on the current hypothesis that Philolaus is the earliest representative of such

---

[123] See Graham, 'Philolaus', 52.

[124] More on this below, p. 138. See *ibid.*, 55; cf. also C. Sirat, 'Les lettres hébraïques, leur existence idéale et matérielle', in *Perspectives on Jewish Thought and Mysticism*, ed. A. L. Ivry, A. Arkush and E. Wolfson, dedicated to the memory of Alexander Altmann (Amsterdam: Harwood Academic Publishers, 1998), 240.

view, the task ahead is to establish, however tentatively, the transmission line, or lines, of this number cosmology.

Let us take as point of departure and at the same time as chart, an illustration from a twelfth-century copy of Boethius' *Fundamentals of Music*,[125] where appear depicted, as the great milestones in the study of music: Boethius and Pythagoras in the upper half, and Plato and Nicomachus in the lower half.[126]

The image captions read as follows:

[125] Ms. Ii.3.12, fol. 61v. Reproduced by permission of Cambridge University Library.

[126] See Hicks, 'Pythagoras and Pythagoreanism', 428.

1–BOETIUS. *Consul et eximiae scrutator philosophiae. Ut videat vocum discrimina per monochordum. Iudicat aure sonum percurrens indice nervum.*

Boethius. Companion and student of the excellent philosophy. In order to observe the differences between sounds with the aid of the monochord, he slides his finger along the string and tells the note by ear.

2– *Pythagoras physicus physiceque latentis amicus. Pondera discernit trutinans et dissona spernit. Pulsans aera probat quota quaeque proportio constat.*

Pythagoras, cosmologist and lover of hidden cosmology. He discerns the weights with the balance and discards the dissonant ones. By striking the bells he assesses the quantity and quality of the proportion.

3– *Edocet ipsorum summus Plato philosophorum quomodo disparium paritas sonat una sonorum.*

Plato, the greatest of philosophers themselves, is teaching in what way is achieved a consonance of disparate sounds.

4– *Obviat instanti ratione Nicomachus illi.*

Nicomachus confronts him with a pressing argument.

*

The iconological analysis is not without interest,[127] but I shall look at it primarily as a testimony to the association established, over a thousand years after Pythagoras' lifetime, between these figures of the history of philosophy, viewed here in their capacity of masters of music, a very Pythagorean concern and one of the branches of mathematics. In fact, the monochord played in the image by Boethius is one of the basic components of, and thus a direct link with, the earliest layers of Pythagorean legend – the Master himself is said to have discovered with its aid the numerical correspondences of musical intervals.[128]

The manuscript comes from Canterbury, which had associations with the School of Chartres just at the time when knowledge was being received

---

[127] See A. Katzenellenbogen, 'The Representation of the Seven Liberal Arts', in *Twelfth-Century Europe and the Foundations of Modern Society*, ed. M. Clagett (Madison: The University of Wisconsin Press, 1966), 46, and D. Knipp, 'Medieval Visual Images of Plato', in *The Platonic Tradition in the Middle Ages. A Doxographic Approach*, ed. S. Gersh and M. J. Hoenen (Walter de Gruyter, 2002), 376.

[128] See especially Burkert, *L & S*, 369ff.; also Huffman, *Archytas*, 48.

from Byzantium and the doctrines of Plato's *Timaeus* were circulating in Calcidius' translation.[129] The relation between Pythagoras and Plato, and in particular his *Timaeus*, 'the single most seminal philosophical text to emerge from the whole of antiquity,'[130] has been mentioned above (p. 54).

Platonic Pythagorean arithmetic would be accrued in post-classical times with the doctrines and refinements of later Academics, including what we now call Middle and Neo-Platonists, to the point that one of them has been judged, with Plotinus and Iamblichus, to postulate a new layer of reality, a new kind of rarified 'number', for every difficulty encountered in the text of the *Timaeus*.[131] Some have gone so far as to call the Middle Ages an age of 'New Pythagoreanism,' thereby prompting a further specification: it was not just any Pythagoreanism, but the 'mathematical Pythagoreanism' of Nicomachus which 'captured the medieval imagination'.[132] Indeed, as we advance down the centuries, it is important to keep in mind that the medieval image of Pythagoras had little to do with the historical Pythagoras, and it was not a novel creation but a direct outcome of the late antique presentations of Pythagoras found in such authors as Boethius (drawing on Nicomachus), Calcidius and Macrobius.[133]

Similarly, the medieval Platonic tradition as a whole is much too complex to be described indiscriminately as either Platonism or Neoplatonism, and 'often behind a Neoplatonic interpretation, or combined perhaps with an exegesis of Hellenistic provenance, a purely Platonic element is found.'[134] In this landscape, the figure of Philo of Alexandria marks an important meeting point of traditions: Platonic, Aristotelian, Hellenistic, Jewish, and sets a tendency to harmonisation of diverging schools which

---

[129] See E. Poleg and L. Light, eds., *Form and Function in the Late Medieval Bible*, Library of the Written Word–The Manuscript World (Leiden: Brill, 2013), 34.

[130] D. Sedley, 'Hesiod's *Theogony* and Plato's *Timaeus*', in *Plato and Hesiod*, ed. G. Boys-Stones and J. Haubold (Oxford University Press, 2010), 246.

[131] S. Slaveva-Griffin, 'Number in the Metaphysical Landscape', in *The Routledge Handbook of Neoplatonism*, by P. Remes and S. Slaveva-Griffin (Routledge, 2014), 209.

[132] See Hicks, 'Pythagoras and Pythagoreanism', 418. For an up-to-date bibliography on Nicomachus, see the *Pythagoras Foundation Newsletter*, no. 24, March 2019, at www.stichting-pythagoras.nl/).

[133] Huffman, *History*, 21.

[134] R. Klibansky, *The Continuity of the Platonic Tradition During the Middle Ages: Outlines of a* Corpus Platonicum Medii Aevi (London: Warburg Institute, 1939), 36.

would have a wide and lasting impact.[135] To complete the panorama, especially as I intend to study Semitic derivations, it should be noted that since Alexandrian times the word 'Hermetic' is used to refer not just to works associated with the name Hermes, but also to all manner of works with 'Gnostic', 'Neoplatonic', 'Neopythagorean', or 'esoteric' tendencies, and eventually practically any early Arabic pseudepigraph.[136]

And this conflation of schools and authors did not stop there. Even Aristotle, through the ascription of some Arabic translations to his name and other similar filtering,[137] acquired eventually a rather Neoplatonic profile, which would make its way into Latin translations and convey a complex, if not outright baffling doctrinal variety.[138] Witness to these developments are, for instance, pronouncements such as the first or second century BC Πλάτων πυθαγορίζει – Plato 'pythagorises',[139] or Jerome's famous ἢ Πλάτων φιλωνίζει, ἢ Φίλων πλατωνίζει, *aut Plato Philonem sequitur, aut Platonem Philo*, 'either Plato is a Philonist or Philo is a Platonist.'[140] The resemblance between Plato and Philo, both in contents and form, was so strong, that in a humorous anachronism Plato is suggested to have followed an author born centuries after.

1. Nicomachus and his Introduction

Returning to the picture and as to Nicomachus' Pythagorean credentials, he authored a biography of Pythagoras which proved most influential through Porphyry and Iamblichus.[141] His *Introduction to Arithmetic*, 'despite its

---

[135] I shall have occasion to discuss his writings later. See N. S. Gara, 'Die Rezeption der Philosophie des Aristoteles im Islam als Beispiel die Rezeption der Seelenlehre des Aristoteles bei Ibn Sīnās Buch (ʿIlm al-nafs: Die Wissenschaft der Seele' (PhD diss., Seminar für Sprachen und Kulturen des Vorderen Orients, der Ruprecht–Karls–Universität Heidelberg, 2003), 167–8.

[136] See K. van Bladel, *The Arabic Hermes: From Pagan Sage to Prophet of Science*, Oxford Studies in Late Antiquity (New York: Oxford University Press, 2009), 19.

[137] See Klibansky, *The Continuity*, 40.

[138] See C. D'Ancona, 'From Late Antiquity to the Arab Middle Ages: the commentaries and the »harmony between the philosophies of Plato and Aristotle«', in *Albertus Magnus und die Anfänge der Aristoteles-Rezeption im lateinischen Mittelalter*, ed. L. Honnefelder, Subsidia Albertina 1 (Münster: Aschendorff, 2005), 54; and also M. Stepaniants and J. Behuniak, *Introduction to Eastern Thought* (Walnut Creek, CA: AltaMira Press, 2002), 6.

[139] Aetius, II, 6, 6; Eusebius, *Prep.* 15, 37.

[140] *De vir. ill.* 11.

[141] Burkert, *L & S*, 98–99. Iamblichus' *Vita* is said to be 'the textual locus where a clear relation between Orpheus, Pythagoras and Plato can be found,' A. Motta, 'Materia e forma

poorness from a mathematical point of view, was the most influential work on arithmetic from the time it was written, sometime between the latter part of the first and the first part of the second centuries AD, until the sixteenth century. The treatise was translated into Latin by Apuleius [lost] and some centuries later by Boethius, and it is the ultimate source of the arithmetical treatises of Cassiodorus, Martianus Capella, and Isidorus of Seville.'[142]
This same *Introduction* was translated into Arabic twice[143] and it not only provided Avicenna with some arithmetical knowledge for his *Metaphysics*,[144] but seems to have exercised a powerful influence on later Jewish and Islamic developments. Some scholars have found traces of Nicomachus' *Introduction* in the *Rasā'il* of the Ikhwān al-Ṣafā[145] and even possibly in the *Sefer Yetsirah*.[146] Through these two major works, countless developments in Islamic and Jewish literature would carry the Pythagorean imprint, including key and long-lived Kabbalistic concepts. Furthermore, in 1317, Qalonymos b. Qalonymos produced a Hebrew translation from the Arabic which would circulate in Andalusia, exerting a non-negligible influence on Jewish thinkers from the fourteenth century onward.[147] Recalling the previous chapter, the significance of Nicomachus in the field of arithmetic appears very similar to the one of Dionysius Thrax in grammatical tradition.

---

dei miti. Su mimesi platonica e simbologia omerica', *Revista Estética e Semiótica* (Brasilia) 5, no. 2 (2015): 23.

[142] Asclepius of Tralles, *Commentary to Nicomachus'* Introduction to Arithmetic, ed. L. Tarán (Philadelphia: American Philosophical Society, 1969), 5.

[143] For details, see G. Freudenthal and M. Zonta, 'Remnants of Ḥabīb Ibn Bahrīz's Arabic Translation of Nicomachus of Gerasa's *Introduction to Arithmetic*', in *Adaptations and Innovations: Studies on the Interaction between Jewish and Islamic Thought and Literature from the Early Middle Ages to the Late Twentieth Century, dedicated to Prof. Joel L. Kraemer* (Louvain: Éditions Peeters, 2007), 67.

[144] D. Gutas, *Avicenna and the Aristotelian Tradition: Introduction to Reading Avicenna's Philosophical Works. Second, Revised and Enlarged Edition, including an Inventory of Avicenna's Authentic Works*, Islamic Philosophy, Theology and Science. Texts and Studies 89 (Leiden, Boston: Brill, 2014), 105, 171.

[145] See C. Baffioni, 'Citazioni di autori antichi nelle *Rasa'il Ikhwan al-Safa'*: il caso di Nicomaco di Gerasa', in *The Ancient Tradition in Christian and Islamic Hellenism, Studies on the Transmission of Greek Philosophy and Sciences*, ed. G. Endress and R. Kruk (Leiden: Research School CNWS, 1997), 3–27.

[146] See S. Wasserstrom, 'Sefer Yesira and Early Islam: A Reappraisal', *Journal of Jewish Thought and Philosophy* 3, no. 1 (1994): 10. Thābit's mathematical work was known to Saʿadyā Gaon, the earliest extant commentator of *Sefer Yetsirah*.

[147] Freudenthal and Zonta, 'Remnants', 69.

III. Nicomachus' Introduction Tables

To jump finally into the thick of this centuries-long 'conversation' outlined above, whilst tracking in the original texts the course of the concept of the alphanumeric element, I present in the following pages a Nicomachean *tetrapla* of sorts in seven tables, comparing the Greek original,[148] Arabic[149] and English[150] translations of it, and Boethius' related passages, which are in most cases not translations but elaborations of the Greek material. I have also had occasion to consult some of the Hebrew manuscripts of the Qalonymos Hebrew translation,[151] and thus to have on sight the three languages of medieval trilingual libraries[152] facing the Arabic version, which was so intimately and decisively related to the Greek and the Hebrew.

My English translation is based on D'Ooge's translation from the Greek, with frequent adjustments of key terms with a view to bringing out the literal import and the possible connections of the text. I have added some highlighting to draw attention to phrases or concepts which are commented upon after every table. The asterisks * in the Arabic text indicate those readings judged dubious by Kutsch, whose diplomatic spelling I have retained throughout, including the absence of hamzas and other such details. The commentaries by Asclepios[153] and Philoponus[154] have been consulted too, though I have found little in them of much relevance to the passages discussed.

---

[148] Nicomachus of Gerasa, *Introduction Arithmétique*, ed. J. Bertier, Histoire des doctrines de l'Antiquité classique 2 (Paris: Vrin, 1978); Nicomachus of Gerasa, *Introductio arithmetica*, ed. R. Hoche (Leipzig: Teubner, 1866).

[149] Nicomachus of Gerasa, *Tābit b. Qurra's arabische Übersetzung der Arithmētikē eisagōgē des Nikomachos von Gerasa: Kitāb al-Madḫal ilā ʿilm al-ʿadad*, ed. W. Kutsch (Beyrut: Imprimérie Catholique, 1958).

[150] Nicomachus of Gerasa, *Introduction to Arithmetic*, trans. M. D'Ooge, with studies in Greek arithmetic by F. E. Robbins and L. C. Karpinsky (New York and London: Macmillan, 1926).

[151] BnF, Ms Hébreu 1093.

[152] *E.g.* Corpus Christi, Oxford, or the Collège des trois langues, Louvain, or Alcalá de Henares.

[153] Asclepius of Tralles, *Commentary to Nicomachus'* Introduction to Arithmetic.

[154] J. Philoponus, *Commentario alla Introduzione aritmetica di Nicomaco di Gerasa*, trans. G. Giardina (Catania: CUECM, 1999).

TABLE 1	Nicomachus 1.1 / Boethius 1.1
ταῦτα ἂν εἴη τὰ ἄυλα καὶ ὧν κατὰ **μετουσίαν** ἕκαστον λοιπὸν τῶν ὁμωνύμως ὄντων καὶ καλουμένων τόδε τι λέγεται καὶ ἔστι. τὰ μὲν γὰρ σωματικὰ δήπου καὶ **ὑλικὰ** ἐν διηνεκεῖ ῥύσει καὶ μεταβολῇ διὰ παντός ἐστι **μιμούμενα** τὴν τῆς ἐξ ἀρχῆς ἀιδίου ὕλης καὶ ὑποστάσεως φύσιν καὶ ἰδιότητα· ὅλη γὰρ δι᾽ ὅλης ἦν τρεπτὴ καὶ ἀλλοιωτή· τὰ δὲ **περὶ αὐτὴν ἢ καὶ σὺν αὐτῇ θεωρούμενα** ἀσώματα, οἷον ποιότητες, ποσότητες (...) πάντα ἁπλῶς, οἷς περιέχεται τὰ ἐν ἑκάστῳ σώματι, ὑπάρχει καθ᾽ ἑαυτὰ ἀκίνητα καὶ ἀμετάπτωτα, συμβεβηκότως δὲ **μετέχει καὶ παραπολαύει** τῶν περὶ τὸ ὑποκείμενον σῶμα παθῶν.	وهذه الاشيا هي الاشيا الابدية الدائمة التي ليست هيولانية فاما كل واحد من الاشيا الباقية فانما يسمّى بهذا الاسم لِمشاركته للاشيا الّتي ذكرنا فيقال انّها موجودة على جهة اتفاق الاسمآ فاما انها اشيا فانها يقال وهي ايضا كذلك للحقيقة وذلك انّ الامر في الاشيا الجسمانية العنصرية هي ابدا في تنقل وتميز احوال بمنزلة الشي الجاري الّذي لا ثبات له وانّ بالواجب ما صارت بهذا السبب تَشَبَّه بطبيعة العنصر الّذي هو فيها بخواصه امر بيّن وذلك ان كل واحد من هذه الاشيا يتغيّر بكليته ويصير غير الّذي كان اوّلا وامّا ما ليس بجسم مما هو بحال الاجسام او مما يُرى ويظهر معه مثل الكيفية والكمية (...) وبالجملة جميع الاشيا المطبقة باحوال كلّ واحد من الاجسام فانّها اشيا امّا بذاتها فغير متغيرة ولا منتقلة وامّا على جهة ارضية فانّها تشارك الاعراض الّتي تعرض للجسم الموضوع وتقارنها.
Esse autem illa dicimus, quae nec intentione crescunt, nec retractione minuuntur, nec variationibus permutantur, sed in propria semper vi, suae se naturae subsidiis nixa custodiunt. Haec autem sunt qualitates, quantitates (…) et quidquid **adunatum quodammodo corporibus** invenitur. Quae ipsa quidem natura incorporea sunt, et **immutabilis substantiae ratione vigentia**, **participatione** vero corporis permutantur, et **tactu** variabilis rei, in vertibilem inconstantiam transeunt.	These real things would be things immaterial, by **sharing in the substance** of which everything else that exists under the same name and is so called is said to be ‘this particular thing’, and exists. For bodily, **material** things are, to be sure, forever involved in continuous flow and change – in **imitation** of the nature and peculiar quality of that eternal matter and substance which has been from the beginning, and which was all changeable and variable throughout. The bodiless things, however, of which **we conceive in connection with or together with** matter, such as qualities, quantities […] all those things, in a word, whereby the qualities found in each body are comprehended – all these are of themselves immovable and unchangeable, but accidentally **they share in and partake** of the affections of the body to which they belong.

– One of the interests we had was about the precise relation between the divine 'arch-types' and the phenomena (see above, p. 32). As regards letters, the interpretations seem to be all rather tropological, 'a simile, a metaphor', until we come to the Kabbalistic authors, but for the Pythagoreans, as we have seen and see here, number is more ontological. The relation between the numbers *in divinis* – which in the Arabic are further described as 'eternal and everlasting' – and phenomena is expressed by the term μετουσία, consubstantiation, which is a strong one, used by Christian theologians to express the participation in God through Christ, the λόγος. The Arabic gives *mushārakah*, a 'partaking', which is not so substantial etymologically, but which is actually used to speak of the Christian communion. Further down, we have μιμούμενα, 'represented', against Thābit's *tashabbahu*, which bespeaks a comparison. Boethius, in his adaptation of the text, speaks of the incorporeal reality being *adunatum quodammodo corporibus*, 'united somehow to the bodies.'

One of the commentaries has the following to add here, regarding the archetypal relation:

ὥσπερ οὖν ἡμεῖς πρὸς ταῦτα βλέποντες τὰ σκιαγραφήματα ποιοῦμεν τόδε τι, οὕτω καὶ ὁ δημιουργὸς πρὸς ἐκεῖνον ἀποβλέπων κοσμεῖ τὰ τῇδε· ἀλλ᾽ ἰστέον ὅτι τὰ μὲν τῇδε σκιαγραφήματα ἀτελῆ εἰσιν, ἐκεῖνος δὲ ὁ λόγος ἀρχέτυπος.	Just as when we look at blueprints[155] and we make this or that, just so the Craftsman, by looking at that one [archetype] there, constructs what is here; but it should be known that our blueprints here below are imperfect, while that one over there is the arch-model analogy.[156]

Of course, ὁ λόγος ἀρχέτυπος could be also rendered as the 'archetypal word' or the 'archetypal ratio'.

– Half way down the passage, the incorporeal realities are seen, θεωρούμενα, *about* and *with* the ever-totally-changing matter, just as the quality of a thing is seen *about* it or *with* it. Thus matter would participate in the ideas as a shirt participates in whiteness. This is also interesting because of the crucial but discreet role played by some prepositions (Ar. *ḥurūf*) in these contexts, and I shall keep an eye on them and their interpretation. The Arabic gives *maʿahu*. A prime example of this kind of metaphysically

---

[156] The word σκιαγράφημα means literally 'painting with the shadows,' a suitable description for the action of the *gnomon*.

[156] Asclepius of Tralles, *Commentary to Nicomachus'* Introduction to Arithmetic, 1, 35.

loaded prepositions is found in the Eucharistic doxology: *per ipsum, et cum ipso, et in ipso… omnis honor et gloria….*[157]

Finally there occur two more words for the same relation: μετέχει καὶ παραπολαύει. The first one is the more usual Greek root and it has its usual Arabic rendering in *sharika* again, but παραπολαύω means that the incorporeal 'shares the fruits' of the matter it qualifies. Thābit resorts to the root *qarana*, which has conjugal associations, while Boethius uses *tactu*.

Perhaps there is no inconsistency in terms, but a variation in points of view: what would appear from a coarser view as 'comparison' or 'imitation', might be seen as an essential participation from another subtler point of view. Thinking of *qarana*, notably the word used of planets 'in conjunction', how do we know if two persons (like a given phenomenon and its incorporeal principle) are married (μετουσία) or if it is just that they share some circumstances (*mushārakah*), or that we see one *with* and *about* the other?

– Another point of note in this passage is the use of the Ar. *ʿunṣur*, a customary translation of στοιχεῖον, which is used here in *al-ashyāʾ al-jismāniyah al-ʿunṣuriyah* as a rendering of ὑλικά, and further down in *al-ṭabīʿat al-ʿunṣur* as a translation of τὴν ἐξ ἀρχῆς φύσιν.

---

[157] See H. Dörrie, 'Präpositionen und Metaphysik: Wechselwirkung zweier Prinzipienreihen', *Museum Helveticum* 26, no. 4 (1969): 217–228. In Platonic studies this has been called a 'prepositional metaphysics', used to indicate nuances in causality in the Platonic corpus. Cf. D. T. Runia, *On the Creation of the Cosmos according to Moses*, Philo of Alexandria Commentary Series 1 (Leiden: Brill, 2001), 139.

TABLE 2

Nicomachus 1.2	
ἐκεῖνα μὲν ἄυλα καὶ ἀίδια καὶ ἀτελεύτητα καὶ διὰ παντὸς ὅμοια καὶ ἀπαράλλακτα πέφυκε διατελεῖν, ὡσαύτως τῇ αὐτῶν οὐσίᾳ ἐπιδιαμένοντα, καὶ **ἕκαστον αὐτῶν κυρίως ὂν λέγεται** (...) λέγεται μὲν **ὁμωνύμως ἐκείνοις ὄντα, καθ' ὅσον αὐτῶν μετέχει**, ἔστι δὲ τῇ ἑαυτῶν φύσει οὐκ ὄντως ὄντα·	قد يسمى ايضا بهذا الاسم علم الاشيا السرمدية الّتي ليس لها هيولي ولا تنقضى المتشابهة الاحوال الّتي ليست متغيرة فانّ جواهرها باقية على امر واحد على التمام وهي الّتي يقال لكلّ واحد منها انّه موجود حقّ الوجود بالصحّة (...) وهي يقال انّها موجودة على سبيل الموافقة في الاسم لتلك الاجزا وذلك على حسب مشاركتها لها واما طبيعتها فهي طبيعة مّا ليس بموجود حق الموجود.

– In this second passage we find again a characterisation of those incorporeal, eternal true entities, and yet another take on the relation between them and material entities: aside from the pair μετέχει–*mushārakah*, it is explained that material transitory things can be called 'beings' inasmuch as they partake of those eternal. The homonymy is conditional on the degree of participation.

Boethius 1.1	
Those things are immaterial, eternal, without end, and it is in their nature to persist ever the same and unchanging, abiding by their own essential being, and **each one of them is said to be in the proper sense** (…) These [other] are also said to be, **with the same name, insofar as they partake of them**, but they do not really exist by their own nature.	Haec igitur (quoniam ut dictum est, natura immutabilem substantiam vimque sortita sunt) vere proprieque esse dicuntur.

– We can start to see here how the sectioning of Boethius' work is far from following to the letter Nicomachus' original. He sometimes merges several Greek sections into one Latin, sometimes he develops one point or other in a detail not found in the Greek. In spite of the occasional collating difficulties, it is possible in most cases to see the 'threads' of Nicomachus' original discourse. The Arabic, by contrast, is close to the Greek, with occasional changes in the order of the words.

TABLE 3

Nicomachus 1.3	
ἅπαν **διάγραμμα ἀριθμοῦ τε σύστημα** καὶ **ἁρμονίας σύστασιν** ἅπασαν τῆς τε **τῶν ἄστρων φορᾶς τὴν ἀναλογίαν** μίαν ἀναφανῆναι δεῖ τῷ κατὰ τρόπον **μανθάνοντι**, φανήσεται δ᾽ ἂν ὃ λέγομεν ὀρθῶς, εἴ τις εἰς ἓν βλέπων πάντα **μανθάνει**· δεσμὸς γὰρ ἁπάντων τούτων εἷς ἀναφανήσεται [...] εἰ δέ τις ἄλλως μεταχειρίζεται φιλοσοφίαν, τύχην δεῖ καλεῖν συνεργόν· οὐ γὰρ ἄνευ τούτων ἡ ὁδός ποτε, ἀλλ᾽ **οὗτος ὁ τρόπος**, **ταῦτα τὰ μαθήματα** εἴτε χαλεπὰ εἴτε ῥᾴδια, ταύτῃ ἰτέον, ἀμελεῖν δὲ οὐ δεῖ [...] δῆλον γάρ, ὅτι **κλίμαξί** τισι καὶ **γεφύραις** ἔοικε ταῦτα **τὰ μαθήματα διαβιβάζοντα τὴν διάνοιαν** ἡμῶν ἀπὸ τῶν αἰσθητῶν καὶ δοξαστῶν ἐπὶ τὰ νοητὰ καὶ ἐπιστημονικὰ καὶ ἀπὸ τῶν συντρόφων ἡμῖν καὶ ἐκ βρεφῶν ὄντων συνήθων ὑλικῶν καὶ σωματικῶν ἐπὶ τὰ ἀσυνήθη τε καὶ ἑτερόφυλα πρὸς τὰς αἰσθήσεις, τῇ δὲ ἀυλίᾳ καὶ ἀιδιότητι **συγγενέστερα** ταῖς ἡμετέραις ψυχαῖς καὶ πολὺ πρότερον τῷ ἐν αὐταῖς νοητικῷ.	كل جَدْوَل من جَداول جماعات العدد و جماعات التاليف فانّه يجب ان مشاكلا لحركات الكواكب ضربا من المشاكلة اذا تفهمه الانسان وهذا شي يظهر للانسان ويتبين ان هو فهم ما يقول فهما صحيحا فنظر في جميع هذه الاشيا نظرة الى شي واحد بعينه وذلك ان رباط جميع هذه الاشيا يُرى رباطا واحدا [...] فان راى احد انه يقدر ان ياخذ في علم الفلسفة من غير هذه الجهة فينبغي ان يسله اسعافن* بذلك وليس ينبغي في وقت من الاوقات ان يسلك غير هذه السبيل لكن ينظر في العلوم التعليمية على هذه الجهة ان صعب ذلك وان سهل فيترك ويسلك هذه السبيل ولا يغفل عنها (...) فهو بيّن ان هذه العلوم التعليمية تشبه المعابر والدرج والجسور وذلك انّها تنقل افهامنا وتصير بها من الاشيا المظنونة الى الاشيا المعقولة المعلومة ومن الاشيا الّتي هي ربايب لنا ونابتة معنا منذ الصبا مالوفة عندنا هيولانية جسمانية الى الاشيا الغير مالوفة والّتي هي مباينة للحواس فاما الاشيا السرمدية الّتي ليست هيولانيت فهي شديدة المجانسة لانفسها والقرب منها ومجانستها للقوة العقلية الّتي هي في الانفس اقدم واسبق.

– Having just quoted Archytas, Nicomachus starts this famous passage with a quotation from Plato's *Epinomis* (991d-e), which is the first clear mention of the quadruple way of study, here in particular a fourfold designation for a limited collection (*jamāʿah*) of fundamentals which reveal the unity of the cosmos, constitute the only right way to learn (οὗτος ὁ

Boethius 1.1	
Every **diagram, system of numbers**, every **scheme of harmony**, and every **law of the movement of the stars** ought to appear one to him who studies rightly; and what we say will properly appear if one studies all things looking to one principle, for there will be seen to be one bond for all these things […] and if anyone attempts philosophy in any other way he must call on Fortune to assist him. For there is never a path without these; this is the way, these the studies, be they hard or easy; by this course must one go, and not neglect it (…) It is clear that these studies are like ladders and bridges that carry our minds from things apprehended by sense and opinion to those comprehended by the mind and understanding, and from those material, physical things, our foster-brethren known to us from childhood, to the things with which we are unacquainted, foreign to our senses, but in their immateriality and eternity **more akin** to our souls, and above to what is intellectual in them.	Sed hinc sumpsit sibi ipsa ratio, **in quibus** possit indagatricem veritatis exercere solertiam. Delegit enim de infinitae multitudinis pluralitate, **finitae terminum quantitatis**, et interminabilis magnitudinis sectione reiecta, definita sibi ad cognitionem spatia depoposcit […] Constat igitur quisquis haec praetermiserit, omnem philosophiae perdidisse doctrinam. Hoc igitur illud quadrivium est, quo iis viandum sit, quibus excellentior animus a nobiscum procreatis sensibus, ad intelligentiae certiora perducitur. Sunt enim quidam **gradus** certaeque **progressionum dimensiones**, quibus ascendi progredique possit.

τρόπος, ταῦτα τὰ μαθήματα), and which are likened to stairs and bridges from the sensible to the immaterial. The four names are διάγραμμα, *jadwal*, a geometrical proposition, a paradigm or table; ἀριθμοῦ σύστημα (*jamāʿat al-ʿadad*), a numerical assemblage; ἁρμονίας σύστασις, a composition of harmony (*jamāʿat al-ta'līf*), referring to music; and τῶν ἄστρων φορᾶς ἀναλογία, the collation of the movements of the heavenly bodies (*mushākalah ḥarakāt al-kawākib*, a rather too literal 'analogy of the movements of the heavenly bodies'). Thābit equated σύστασις with σύστημα, translating both as *jamāʿah*. His translation here may indicate a slightly different text from the Greek we have.

Notwithstanding the *Epinomis* citation, in a chapter entitled 'The Origin of the Quadrivium', Merlan observes and explains how 'closely the quadrivium is connected with the interpretation of the *Timaeus*.'[158]

[158] P. Merlan, *From Platonism to Neoplatonism*, 3rd ed., revised (The Hague: Martinus

– These basic 'diagrams' are pontifical, as mentioned above: κλίμαξι καὶ γεφύραις, and Thābit has one more term, *al-maʿābir wa-al-daraj wa-al-jusūr*, 'fords, a stairway and bridges', *gradus certaeque progressionum dimensiones*. But they are not only the passageways: they also actively carry the rational mind across, διαβιβάζοντα τὴν διάνοιαν, *tanqulu afhāmanā*, *animus perducitur*, towards the intellective and the epistemic, τὰ νοητὰ καὶ ἐπιστημονικὰ, *ad intelligentiae certiora*.

– Boethius gives an adaptation of the passage, explaining that reason needed a determination of finite quantity through which it could seek the truth, and this is 'the fourfold way', his *quadrivium*, thus giving a unitary name to what in Nicomachus is simply a list of the four ways.

TABLE 4

Nicomachus 1.4 / Boethius 1.1	
ἡ ἀριθμητικὴ (...) ἔφαμεν αὐτὴν **ἐν τῇ τοῦ τεχνίτου θεοῦ διανοίᾳ** προυποστῆναι τῶν ἄλλων ὡσανεὶ **λόγον τινὰ κοσμικὸν καὶ παραδειγματικόν**, πρὸς ὃν ἀπερειδόμενος ὁ τῶν ὅλων **δημιουργὸς** ὡς πρὸς **προκέντημά τι** καὶ **ἀρχέτυπον παράδειγμα** τὰ ἐκ τῆς **ὕλης** ἀποτελέσματα κοσμεῖ καὶ τοῦ οἰκείου τέλους τυγχάνειν ποιεῖ.	وهو صناعة علم العدد (...) انها سابقة في علم اللّه صانع الاشيا متقدّمة للعلوم الباقية بمنزلة الشي الجميل الّذي قياسه الى الاشيا الباقية قياس المثال فجعله مثالا لساير الاشيا الّتي خلق وحَذوا عليها وعلى حسبه خلقها وسواها وزيّن ما خلقه من العنصر وبلغ به الامر الافضل الموافق في كل واحد من الاشيا.
Arithmetic (…) existed before all the others **in the mind of the artisan God** like some universal and exemplary plan [λόγος], relying upon which as a design and archetypal example the creator of the universe sets in order his **material** creations and makes them attain to their proper ends.	Haec autem est arithmetica. Haec enim cunctis prior est, non modo quod hanc ille huius mundanae molis **conditor** Deus, primam suae habuit **ratiocinationis** exemplar, et ad hanc cuncta constituit, quaecunque **fabricante ratione**, per numeros assignati ordinis invenere concordiam; sed hoc quoque prior arithmetica declaratur, quod quaecunque natura priora sunt, his sublatis simul posteriora tolluntur.

Nijhoff, 1975), 88ff.

– In this cosmogonic passage, arithmetic is the divine pattern for creation, reminding us strongly of Philo's terms, and God is a craftsman or builder, τεχνίτης, *ṣāniʿ al-ashyā'*, *conditor*, and an artisan, δημιουργὸς, *khāliq*. The Arabic *ʿilm* is in this context more sensitive than the English 'mind' to the range of meanings of διάνοια, which encompasses simultaneously the contents, the process and the faculty of the discursive mind.[159]

– The model is like a cosmic *logos*, a 'word of order', or 'embellishment',[160] a notion picked up by Thābit lines below with emphasis on the aspect of beauty implicit in κοσμικός and κοσμέω: *wa-ʿalā ḥasabihi khalaqahā wa-sawāhā wa-zayyana mā khalaqahu min al-ʿunṣur*, 'and what He made from the original raw material, He made and regulated and embellished according to it.'

– This *logos* is used by the creator as προκέντημα and ἀρχέτυπον παράδειγμα, *mithāl* and *ḥadhw*.[161] Of these terms, two have very practical crafts associations: the rare Greek προκέντημα echoes immemorial methods used to transfer a design by pricking (κεντέω),[162] while the Arabic *ḥadhw*, defined as *taqdīr* and *qaṭʿ*,[163] a measuring and a 'cut' in the sense of a cutting pattern, has to do especially with shoe making, as in a pair of sandals (*naʿl*), implying the mirroring pattern of the two complementary sides.[164]

– The other key Arabic term used for the comparison between the model and the world is *qiyās*, also with the basic meaning of 'measuring', and

---

[159] As reflected in the variety of Arabic alternatives: *dhihn, ʿaql, fikr, ra'y* and others; see *Glossarium Græco-Arabicum*.

[160] In Orthodox Christian doctrine too, το έργο της δημιουργίας σημαίνεται με μία ταξιθετική διαδικασία οργάνωσης της ύλης, 'the work of crafting the world is marked by an order-bringing process of organisation of matter'; see D. Pallis, 'Φίλων ο Αλεξανδρέας', *Great Orthodox Christian Encyclopedia* (Athens) 12 (2015): 551–556.

[161] See direct references to this passage in the online *GALex* filecards Nicom.Arithm.0725 and Nicom.Arithm.0722.

[162] Cf. the medieval 'pricking of the quires,' R. W. Clement, 'Medieval and Renaissance book Production', *Library Faculty & Staff Publications* (Utah State University), no. 10 (1997): 10.

[163] Ibn Manẓūr, *Lisān al-ʿarab* (Cairo: Dār al-Maʿārif, 1981), 814b (hereafter cited as Lisān).

[164] The usage of *ḥadhw* for such an exalted term as the 'archetypal paradigm' casts a remarkable light on the veneration of the sandal pattern of the Prophet (*naʿl al-nabī*) so common through Islamic lands.

perhaps best rendered as an 'analogical relation'. *Qiyās* means also the premises of a syllogism, or the syllogism itself. This would make the relation between the archetypal realities and the world a 'logical' relation, as if the world were an inference from the noetic realm.

– In this case, a detailed translation of Boethius' Latin sheds some additional light on the main ideas:

> Arithmetic is prior to all, not only because the builder God of the multiplex structure of the world had it as exemplar of his own ratiocination, and established by it all things which through the crafting apportioning through numbers came into the concord of the assigned order, but arithmetic is said to be first for this reason also, that whatever by nature are first, if they are removed, later things are also removed.

Masi[165] and others tend to translate *ratio* as 'logic' or 'reason', but it is clear in most cases that the meaning verges towards mathematics. Here, D'Ooge's 'plan' for λόγος is satisfactory only if understood as the plan of a craftsman, a set of proportioned measures, a design, almost like a formula, a recipe, culinary or alchemical, in which strict proportions and procedures are specified (cf. above, p. 46), or as a musical score (cf. above, p. 58).

---

[165] Boethius, *Boethian Number Theory: A Translation of the* De Institutione Arithmetica, ed. M. Masi et al. (Amsterdam: Rodopi, 1983), 74.

TABLE 5

Nicomachus 1.6 / Boethius 1.2	
Πάντα τὰ **κατὰ τεχνικὴν διέξοδον** ὑπὸ φύσεως ἐν τῷ κόσμῳ διατεταγμένα κατὰ μέρος τε καὶ ὅλα φαίνεται **κατὰ ἀριθμὸν ὑπὸ τῆς προνοίας καὶ τοῦ τὰ ὅλα δημιουργήσαντος νοῦ** διακεκρίσθαι τε καὶ κεκοσμῆσθαι **βεβαιουμένου τοῦ παραδείγματος οἷον λόγον προχαράγματος** ἐκ τοῦ **ἐπέχειν** τὸν ἀριθμὸν προυποστάντα ἐν **τῇ τοῦ κοσμοποιοῦ θεοῦ διανοίᾳ**, νοητὸν αὐτὸν μόνον καὶ παντάπασιν ἄυλον, οὐσίαν μέντοι τὴν ὄντως τὴν ἀίδιον, ἵνα πρὸς αὐτὸν ὡς **λόγον τεχνικὸν** ἀποτελεσθῇ τὰ σύμπαντα ταῦτα, χρόνος, κίνησις, οὐρανός, ἄστρα, ἐξελιγμοὶ παντοῖοι.	فنقول انا نرى جميع الاشيا التي قد رتبتها الطبيعة في العالم على طريق صناعي بكليتها وفي جز جز منها انّما خلقها الخالق عزّ وجلّ على نسب الاعداد وهو الذي ميزها وسواها على حال المحمودة الجميلة واكّد فيها امر المثال الذي قصد بها نحوه فانه جعل الاعداد مثالا وشبيها برسم متقدم سابق في علم اللّه خالق العالم الّا انّه انّما هو مفهوم عنده فقط من غير ان يكون ذلك في هيولي ما بوجه من الوجوه بتّة الّا ان ذاته موجوده وعلى حسبه اجرى الامور على طريق صناعي في جميع هذه الاشيا اعنى الزمان والحركة والسما وجميع ادوار الكواكب
All that has been arranged in the universe by nature following a **skilful way** seems both in part and as a whole to have been determined and ordered **in accordance** with number, by **the forethought and the mind** of him that created all things; for the pattern was **fixed, like a preliminary sketch**, by the **domination** of number preexistent **in the mind** of the world-creating God, **number intellectual** only and immaterial in every way, but at the same time the true and the eternal essence, so that with reference to it, **as to an artistic plan**, should be created all these things, time, motion, the heavens, the stars, all sorts of revolutions.	Omnia quaecumque a primaeva rerum natura constructa sunt, numerorum videntur **ratione** formata. Hoc enim fuit principale **in animo conditoris exemplar**. Hinc enim quatuor elementorum multitudo **mutuata** est, hinc temporum vices, hinc motus astrorum, coelique conversio.

– κατὰ τεχνικὴν διέξοδον – Things are arranged in the world following a τεχνικὴ διέξοδος, which could be read as a ‘technical method’. However,

thinking of the similarity with the *Sefer Yetsirah*, where God creates along/through thirty-two 'marvellous ways of wisdom' (*netivot peli'ot ḥokhmah*),[166] I would rather keep 'way', which happens to be closer to the usual meaning of διέξοδος, a pathway, like an orbit, also a detailed narrative.[167] Naturally, given the composition of the word itself, δι-εξ-οδος, it implies the passage through and outward of something. The Heb. *ḥokhmah*, notably unlike its Ar. cognate *ḥikmah*, has also the meaning of technical skill. So a Hebrew rendering of this phrase could very easily read: *netivah ḥokhmah*. Thābit gives *ṭarīq ṣanāʿī*.

– διακεκρίσθαι τε καὶ κεκοσμῆσθαι – What the numbers bring about in the world is this determination and ordering, an idea which acquires a nuance and development in the Arabic as *mayyazahā wa-sawwāhā ʿalā ḥāl al-maḥmūda al-jamīla*, 'He determined and regulated them in a praiseworthy and beautiful condition,' adding 'praiseworthy' to the qualities of the universe, and once again bringing out the aspect of beauty implicit in κοσμέω.

– κατά – Coming back to the cosmological role of the prepositions, here we have this opening κατά, which I have translated as 'following' to suit διέξοδος, rather as a *perlative*,[168] and which could be akin in its function to the opening ב of the Torah (*Bere'shit*) and of the most common version of *Sefer Yetsirah*. Thābit's على shows even more possibilities: 'upon a skilful pathway', 'along a way of craft'…

Further down, κατὰ ἀριθμὸν shows a somehow *instrumental* use of the preposition, and this aspect is disclosed partially in the Latin by saying *numerorum ratione*. The Arabic shows yet another facet of this κατά by saying *ʿalā nasabi al-aʿdād*, 'in the lineage' or 'in relation to', as if 'under the parentage' of numbers.

– *mutuata* – Again on the relation between number or the noetic realities and the transient world, the Latin uses an image not found before: the four natural elements *borrow* from numbers their *multitudo* – the fact that they are four, or perhaps the pattern of their proliferation?

---

[166] See Chapter 7 below.

[167] This directional, or even navigational meaning, is also consistent with the centuries-long tradition of medieval navigation based on a division of space in thirty-two rhumbs.

[168] The perlative case expresses movement through or along a referent noun. For Greek examples, its synthetic causal meaning, and links to 'the extensive and manifold uses of Hebrew ב', cf. P. Bortone, *Greek Prepositions: From Antiquity to the Present* (Oxford University Press, 2010), 158, 192–3.

– προχάραγμα – This word for the nature of the divine paradigm had not been used. It is related to engraving, like γράμματα, and it also makes me think about the inversions between the superior and lower realms that characterise the process of divine stamping and typing.[169] It is related in its usage to προκέντημα, mentioned earlier, and it belongs very clearly to architecture. The corresponding Arabic is *rasm mutaqaddim sābiq*, a 'previous prepared sketch'.

– ἐπέχειν – Yet another facet of the 'participation' is made explicit when the sketch is said to have been established ἐκ τοῦ ἐπέχειν, 'by the domination', 'due to the control' of pre-sup-posed (προυποστάς) number. This domination seems not to have been conveyed into the Arabic or the Latin. Perhaps it might be better, especially given the syntax, to use the intransitive meaning of ἐπέχω, which is frequent with διανοία and νοῦς, meaning 'attend to', 'direct one's mind'; as if the divine number were intended or directed toward the constitution of the heavenly paradigm.

– The other points of note here simply reprise themes mentioned earlier, like the supernal 'location' of the models (ἐν θεοῦ διανοίᾳ, *fī ʿilmi Llāh*, *in animo conditoris*), or their immaterial and eternal quality.

[169] Cf. below, p. 115.

TABLE 6

Nicomachus 1.11	
αὐτῶν μέντοι **συντεθέντων ἑαυτοῖς** δύναιντ᾽ ἂν ἄλλοι γενέσθαι ἀπὸ **πηγῆς** ὡσανεὶ καὶ **ῥίζης** αὐτῶν τούτων ἀρχόμενοι, διόπερ πρῶτοι καλοῦνται ὡσανεὶ **ἀρχαὶ** ἐκείνων **προυποκείμενοι· ἀρχὴ δὲ πᾶσα στοιχειώδης καὶ ἀσύνθετος**, εἰς ἣν πάντα ἀναλύεται καὶ ἐξ ἧς πάντα συνίσταται, αὐτὴ δὲ εἰς οὐδὲν καὶ ἐξ οὐδενός.	واما اذا رُكب هذا النوع الّذي ذكرنا مع نفسه فانّه يتولد منه غيره وكان ساير الاعداد انّما يبتدى من هذه فتكون هذه الاعداد لها بمنزلة الينبوع والاساس الّذي منه ابتداوها ولهذا السبب سميت اعداد اوّل لانّها كمبادي المتقدمة لتلك واما الابتدا الّذي ليس بمركّب والذي هو بمنزلة العنصر الجميعها فهو الواحد وهو الذي اليه ينحل جميعها على طريق العنكر* ومنه تركب واما الواحد فليس ينحل الى شي ولا هو مُركب من شي.

– συντεθέντων – this paragraph speaks of the prime numbers. Their productive 'combination', changed in Latin to *multiplicatio*, but retained in Arabic as *rukkiba maʿa nafsahu*, is reminiscent of *Sefer Yetsirah* §19–21, where the combination (Heb. *hamir, tsaraf*) of the letters brings about the world. Συντίθημι is often used for addition, whereas multiplication is expressed by πολλαπλασιάζειν or simply the preposition ἐπί. *E.g.* τὰ ἡμίσηα ἐπ᾽ ἄλληλα = 'the halves multiplied by each other.'[170]

– The primes are called 'roots' (*al-asās*) as were the elements by Empedocles. They are also compared to a fountain, πηγή, *yanbūʿ*.

[170] M. Bakker, 'A Papyrus with Mathematical Problems', *The Bulletin of the American Society of Papyrologists* 44 (2007): 18.

Boethius 1.14	
When they are **combined with themselves**, other numbers might be produced, as from **a fountain and a root**, having them as principles, wherefore they are called 'prime', because they exist beforehand as **the principles** of the others. For **every principle is elementary and incomposite**, into which everything is made, but the principle itself cannot be resolved into anything or constituted out of anything.	Hi autem **in semetipsos multiplicati** faciunt alios numeros velut primi, eosque primam rerum substantiam vimque sortitos, cunctorum a se procreatorum **velut quaedam elementa** reperies, quia scilicet, et **incompositi** sunt, et simplici generatione formati, atque in eos omnes quicunque ex his prolati sunt numeri resolvuntur, ipsi vero neque ex aliis producuntur, neque in alia reducuntur.

– ἀρχὴ πᾶσα στοιχειώδης – 'every principle is elementary', is modified in Ar. to *al-ibtidāʾ alladhī huwa bi-manzilat al-ʿunṣur*, 'the beginning in lieu of element', recalling the phrase τὰ καλούμενα στοιχεῖα. The relation between ἀρχή and στοιχεῖον, at times verging on synonymity, is of interest, as we had seen by the grammarians, in that it shows how the latter term was far from being exclusively used for the material components.

– Prime numbers have an elemental aspect which makes them very interesting for this research – each one is 'unique' and through their combination it is possible to produce all numbers. However, the primes are countless, which is at odds with the limited number of letters in an alphabet. An alphabet cannot be infinite, since its power lies partly in the small, easy to grasp, number of its components. The question then remains open: in what way, if at all, are the primes 'elementary'? This is precisely the topic of the next and last passage.

TABLE 7

Nicomachus 2.1	
Ἐπειδὴ στοιχεῖον λέγεται **καὶ ἔστιν**, ἐξ οὗ ἐλαχίστου συνίσταταί τι καὶ εἰς ὃ ἐλάχιστον ἀναλύεται **οἷον γράμματα** μὲν τῆς **ἐγγραμμάτου φωνῆς στοιχεῖα** λέγεται, ἐξ αὐτῶν τε γὰρ ἡ σύστασις τῆς συμπάσης ἐνάρθρου φωνῆς καὶ εἰς αὐτὰ ἔσχατα ἀναλύεται· φθόγγοι δὲ μελῳδίας ἁπάσης, ἀφ᾽ ὧν ἄρχεται συγκρίνεσθαι καὶ εἰς οὓς ἀναλύεται· κοινῇ δὲ τοῦ κόσμου **τὰ λεγόμενα** τέσσαρα **στοιχεῖα** ἁπλᾶ ὑπάρχει σώματα, πῦρ, ὕδωρ, ἀήρ, γῆ· ἐκ γὰρ πρωτίστων αὐτῶν ἡ σύστασις τοῦ παντὸς φυσιολογεῖται καὶ εἰς αὐτὰ ἔσχατα ἐπινοεῖται ἡ ἀνάλυσις.	انما لما كان الشي الّذي يقال له العنصر والّذي هو ايضا عنصر بالحقيقة هو الشي الاصغر الّذي من اجتماعه يكون قوام شي ما والاصغر الّذي اليه ينحلّ ذلك الشي راجعا كما ان الحروف الّتي يقال لها عناصر الكتاب وذلك ان من اجتماعها يكون قوام جميع الاصوات المفصلة واليها ينحلّ راجعا اجتماعهه وكما ان النغم هي الاصل الّذي منه يُفهم تاليف اللحون كلها واليها تنحل راجعة وكما ان عناصر جملة العالم هي الاربعة الاجسام الّتي يقال لها العناصر البسيطة وهي النار والهوى والمآ والارض وذلك ان هذه الاجسام الّتي من اجتماعها اوّلا يكون قوام الكل والّتي اليها يُفهم انحلاله راجعا اخر.

– Nicomachus opens the second part of his book looking for the στοιχεῖον of arithmetic, and in order to do so he defines the word, and he certainly does not have in mind a material principle. There is indeed a remarkable subtlety in the use of the word: there is an emphatic καὶ ἔστιν at the beginning which only appears in a clearer light when the four cosmic τὰ λεγόμενα στοιχεῖα are mentioned (*al-ajsām allatī yuqālu lahā al-ʿanāṣir*).

Boethius 2.1	
An element **is said to be, and is**, the smallest thing which enters into the composition of an object and the least thing into which it can be analysed. Letters, for example, are called the **elements of inscribed speech**, for out of them all articulate speech is composed and into them finally it is resolved. Sounds are the elements of all melody; for they are the beginning of its composition and into them it is resolved. The so-called four elements of the universe in general are simple bodies, fire, water, air, and earth; for our of them in the first instance we account for the constitution of the universe, and into them finally we conceive of it as being resolved.	Sed quae rerum elementa sunt, ex eisdem principaliter omnia componuntur, et in eadem rursus resolutione facta resolvuntur. Ut quoniam articularis vocis elementa sunt litterae, **ab eis est syllabarum progressa coniunctio**, et in easdem rursus terminatur extremas, eamdemque vim obtinet sonus in musicis. Iam vero mundum **corpora** quattuor non ignoramus efficere. Namque (ut ait Lucretius) Ex imbri terra atque anima gignuntur et igni; sed in haec rursus eius quattuor elementa fit postrema resolutio. Ita igitur, quoniam ex aequalitatis margine cunctas inaequalitatis species proficisci videmus, omnis a nobis inaequalitas ad aequalitem rursus, velut ad quoddam elementum proprii generis resolvatur.

So these four are only called elements, but at the beginning, speaking in general, he had specified that the smallest components of something not only are called but *are indeed* elements. The comparison with the letters and the sounds only brings up more questions, as the relation between written letter and sound is brought in as a sort of *topos* and left unexplored. The strain put on the Arabic translation is patent when *ḥurūf*, 'letters', has to be used in the middle of the paragraph, before returning to *ʿanāṣir*, 'elements'.

D. Conclusion

From Nicomachus' days (first–second century AD) until the sixteenth century, he was honoured for his *Introduction to Arithmetic* among Greeks, Latins, Jews and Arabs, who considered his work to be the basis of

the science of numbers.[171] He was considered a pivotal thinker between early Pythagorean and Platonist authors and the new developments in Neoplatonic and other groups.

Boethius' writings, dating from the sixth century were so decisive in defining the intellectual currents of the twelfth century that it is often called the *aetas Boethiana*.[172] He was also considered a pivotal figure, frequently described as 'the last of the Romans and the first of the scholastic philosophers', between the end of Antiquity and the beginning of the Middle Ages.[173]

Thābit ibn Qurra was one of the most accomplished scholars active in Baghdad during the ninth century, and his contributions encompass not only arithmetic but also astronomy, mechanics, geography and medicine.[174] As a Sabian from Harran and a Syriac speaker, Thābit was among the scholars destined to contribute to one of the most important cultural transfers in the history of Europe, the translation of the Greek heritage into Arabic at the heart of Islamic civilisation.

The continued and authoritative unanimity of these three scholars through the centuries is testimony to the shared set of basic cosmological tenets found with little variation from Greek antiquity to the late Mediterranean Middle Ages, in what was effectively not only a trilingual but a quadrilingual world.[175] We have here an example of what Curtius calls 'a community of great authors throughout the centuries', who 'by a series of interconnections across time' held together the Mediterranean cultural continuum.[176] In fact, by the comparison above of the three versions of the *Introduction*, we have plunged into the Middle Ages, leaping across

---

[171] See Nicomachus of Gerasa, *Introduction to Arithmetic*, 124.

[172] M. Konik, 'A reception of the idea of the music of the spheres in the music theory of the twelfth and thirteenth centuries', *Musica Iagellonica* (Cracow) 6 (2012): 5–50.

[173] See R. Rashed and R. Morelon, 'Thābit b. Ḳurra', *Encyclopaedia of Islam, Second Edition*.

[174] J. J. O'Connor and E. F. Robertson, 'Al-Sabi Thabit ibn Qurra al-Harrani'.

[175] These four languages are not meant in any strictly exclusive way, since the importance of Syriac, among other less influential, is clearly beyond question.

[176] Curtius, *European Literature and the Latin Middle Ages*, 18, 397. Without detracting from his great contribution, it is important to be aware of the limitations of Curtius' 'community', especially regarding Arab authors; see R. Lida de Malkiel, 'Perduración de la literatura antigua en Occidente', Review of E. R. Curtius *Europäische Literatur*, *Romance Philology* 5 (1951): 108–109.

centuries and yet as if stationary in a scholarly community of shared doctrines.[177]

In the following chapter I shall return to late antiquity and the early Middle Ages, to follow a closely parallel thread of Pythagorean arithmetic in a world transformed by the advent of the Abrahamic faiths.

*

But before proceeding, I will close this chapter with some verses from Boethius' *De consolatione philosophiae* (3, 9) which have been said to 'summarise in less than thirty verses the entire first part of the *Timaeus*, as if suspended between Platonism and Christianity.'[178] In doing so, they recapitulate the time span between the most 'Pythagorean' pages of Plato and the Abrahamic monotheistic discourse which would be adopted by European philosophy from Boethius on.

O qui perpetua mundum ratione gubernas
Terrarum caelique sator qui tempus ab aevo
Ire iubes stabilisque manens das cuncta moveri,
Quem non externae pepulerunt fingere causae
Materiae fluitantis opus, verum insita summi
Forma boni livore carens, tu cuncta superno
Ducis ab exemplo, pulchrum pulcherrimus ipse
Mundum mente gerens similique in imagine formans
Perfectasque iubens perfectum absolvere partes.
Tu numeris elementa ligas [...]

O you who rule the world with steady reckoning,
father of lands and heaven, who from eternity

---

[177] 'In this field, it is always dangerous to consider time as absolutely linear,' L. Brisson, *Le même et l'autre dans la structure ontologique du Timée de Platon: un commentaire systématique du Timée de Platon*, 3rd ed., International Plato studies 2 (Sankt Augustin: Academia Verlag, 1998), 23.

[178] A. Lernould, 'Boèce. Consolation de Philosophie III, *metrum* 9', in *Plato Revived: Essays on Ancient Platonism in Honour of Dominic J. O'Meara*, Beiträge zur Altertumskunde 317 (Berlin/Boston: Walter de Gruyter, 2013), 376, 388; see also A. J. Hicks, *Composing the World: Harmony in the Medieval Platonic Cosmos* (Oxford University Press, 2017), 258–9.

> ordered time to advance, and who unmoving set everything in motion,
> you whom no external causes forced to give shape
> to a work from unsteady matter, but rather the inner form
> of the highest good, free of any envy. You who bring forth
> all things after the exalted heavenly pattern, producing in your mind
> a beautiful world as you are beautiful, and shaping it in faithful
> resemblance,
> ordering that its perfection be accomplished in every one of its parts.
> You bind with numbers the elements […][179]

These verses follow only a few lines after Lady Philosophy has explained: *Sed cum, ut in Timaeo Platoni nostro placet, in minimis quoque rebus divinum praesidium debeat implorari* – 'since, as in the *Timaeus* it pleased our Plato, in the smallest things too one should invoke divine guidance.' The connection to the Platonic dialogue is thus explicit, and the verses quoted echo the demiurgic work and several of the cosmogonic stages described in *Timaeus*. At the end of the quotation, we can see how the arrangement of the elements in the world, literally a binding up (*ligas*), is accomplished by the power of number.[180]

*

Hardly a better illustration of this tight geometric knot of the elements in the cosmos could be found than the 'Mundus-Annus-Homo rota' below,[181] where the elements and their qualities are tied (*ligati*) within and by a perfectly rigorous geometric pattern (*numeris*). Moreover, the *rota* in the text of Isidore accompanies a quotation from the *Hexameron* of St Ambrose (3, 5) which describes the intricate, 'conjugal' (*iugales*) relations between elements and qualities, and finishes explaining how

---

[179] For medieval commentaries of these verses, and how the elements are said to combine *ad modum numerorum*, see I. Caiazzo, 'La forme et les qualités des éléments: lectures médiévales du Timée', in *Il Timeo. Esegesi greche, arabe, latine*, ed. F. Celia and A. Ulacco (Pisa: Plus, 2012), 319-323.

[180] Cf. *Timaeus* 31b and 53a–b. See Lernould, 'Boèce. Consolation III, 9', 377.

[181] From a woodcut in the edition of the *De natura rerum* of Isidore of Seville, printed in 1472.

per hunc circuitum et chorum quendam concordiae societatisque conueniunt. unde et graece στοιχεῖα dicuntur quae latine elementa dicimus, quod sibi conueniant et concinant.

Through this circle and dancing round of sorts they are united in concord and fellowship. And this is why what we call 'elements' in Latin, are called στοιχεῖα in Greek, because they unite and are in accord with one another.[182]

The next steps in my investigation will explore further the particulars and various manifestations of this cosmogonic and cosmological concert and chorus of the στοιχεῖα.

[182] See B. Obrist, 'Le diagramme isidorien des saisons, son contenu physique et les représentations figuratives', *Mélanges de l'Ecole française de Rome. Moyen-Age* 108, no. 1 (1996): 119–20 for further on the diagram's interpretation and origin, going back to ancient commentators of Aristotle.

Part II

Alphanumeric Cosmology in the Abrahamic Scriptures

Introduction to Part II: Change and Continuity

Following the evolution of our concept through late ancient and early medieval philosophy, I need to take stock of two major contextual shifts which in many ways will determine every intellectual endeavour for at least fifteen centuries after Nicomachus of Gerasa: the cultural diversification of Classical Graeco-Roman civilisation, and the spreading and establishment of a monotheistic worldview.

The conquests of Alexander the Great in the fourth century BC and the eventual Roman imperial expansion had as a most lasting combined result the gradual emergence of a *cosmopolis* quite foreign in practice to any classical Attic or Roman republican polity. By the turn of the era, just after the time of Dionysius Thrax, the main cultural centre of this 'Mediterranean' *cosmopolis* was Alexandria, where Roman citizens and foreigners of all origins coexisted in a cultural melting pot that never ceased to hark back to the glories of Classical Greece and Rome, and yet never stopped evolving into new forms. Three factors altered in turn and completely the socio-political panorama: the eventual division of the Roman empire (285 AD), the adoption of Christianity as official imperial religion (380 AD), and the advent of Islam in the early seventh century, and yet, in each of these cases, it only took decades for a remarkable and deep scholarly continuity to be reaffirmed through the surface changes of peoples, languages and religions.[1]

A figure like Nicomachus, whose influence we started studying in the previous chapter, is a testimony to this ongoing cultural integration. Nicomachus hailed from the Roman East as did also, in later times, several of the greatest Platonists. Iamblichus came from an illustrious Emesan family boasting Aramaic, Arabic, Greek and Latin names. One could also

---

[1] This is all closely related to the view summed up by Guy Stroumsa when he speaks of a 'connected religious history' across a 'scriptural galaxy'; see G. G. Stroumsa, 'The Scriptural Galaxy of Late Antiquity', in *A Companion to Religion in Late Antiquity* (Hoboken, NJ: Wiley Blackwell, 2018), 563, 566.

mention Proclus, who was born in Constantinople, or his disciple Marinus, who is thought to have been a Jew from Syria Palaestina.[2]

Here we have indeed one of the most remarkable facts in the history of philosophy. As famously happened to the mighty Romans when they became disciples of their Athenian subjects, just so, wave after wave of new political, social and religious superstructures would eventually adopt and appropriate the same pool of ultimate philosophical concerns and questions brought together by Aristotle, the great *de facto* coordinator of early Greek philosophy.

The idea of one almighty and beneficent deity was not foreign to classical antiquity, where the boundaries between 'monotheism' and 'polytheism' were fluid within a continuum, and did not determine exclusive domains.[3] In fact, the idea of a *summum bonum* was already in the Platonic dialogues and was abundantly elaborated upon by Plato's followers. Through all the upheavals and in spite of all the conflicting beliefs, this idea became the great unifying doctrinal factor of the post-Classical *cosmopolis*, as is evinced by the shared Abrahamic ancestry professed by all three mainstream religions, Judaism, Christianity and Islam, which would witness, assimilate and transmute the demise of Classical civilisation in so many ways.[4]

More specifically within our field of interest, one major common doctrine shared by the Abrahamic faiths was the primacy of the Divine Word, either as the cosmogonic *fiat* – the ten creative Jewish *ma'amarot*, the Islamic creative command, *amr* – or as a cosmological manifestation of the divine as λόγος, aurally as recitation, Ar. *qur'an*, and as the letters (Heb. *otot*) and the verses (Ar. cognate *āyāt*) of the Holy Book. I shall repeatedly come back to these fundamental terms in the coming pages, examining in detail how they relate to our sought-after 'elements' in their phonetic, graphic and logical dimensions, when and how they may recall one or another of the many facets of the στοιχεῖα found in previous pages, and in what ways our concept moved through languages and cultures.

---

[2] See P. Merlan, 'Zur Zahlenlehre im Platonismus (Neuplatonismus) und im *Sefer Yezira*', *Journal of the History of Philosophy* 3, no. 2 (1965): 181.

[3] Cf. G. Bohak, 'The Impact of Jewish Monotheism on the Greco-Roman World', *Jewish Studies Quarterly* 7, no. 1 (2000): 13, 21.

[4] In this regard, cf. S. Noegel, J. Walker and B. Wheeler, eds., *Prayer, Magic, and the Stars in the Ancient and Late Antique World*, Magic in History (Pennsylvania State University, 2003), 5.

Trying to organise the wealth of material pertaining to this chapter opens up many possibilities: to be strictly chronological, or work at a time on each of the linguistic/religious domains, or attempt a thematic sectioning, but given that the main interest is to bring into relief the correspondences and connections, and to show how our basic concept disregards time, languages and subject boundaries, I shall continue as I started in previous chapters, placing the emphasis on the semantic analogies and connections rather than on a very linear timeline: I shall take points of departure arranged in chronological order of works and authors, but within each particular section I will allow for as much time travelling as is required by this comparative procedure. Having said that, the four chapters in this second part will move approximately, allowing for exceptions, between the beginning of the Christian era and the eighth century.

Chapter 3

Jewish Sources and Exegesis

A. *Tanakh* and Translations

Honouring ancient methodology, I shall start by having a look at the Jewish scriptures themselves, bringing in for comparison the most influential translations used throughout the Middle Ages by most communities of the Abrahamic faiths:[1] the early Greek translation or *Septuagint*, Latin renderings from Jerome's *Vulgate*, and some medieval Arabic versions. In each of these forms, the text of the *Tanakh* was to exercise a lasting and powerful cultural influence, not only in religious environments, but also in various scholarly fields, given that scriptural authority provided the epistemological foundation of every discipline.

I. Genesis – Creation by Speech

The prominence of language in Jewish cosmogony, of the spoken word in particular, is at first sight evident from as early as the third verse of Genesis, *wa-yo'mer elohim…*, 'and God said…'[2] This expression, which occurs nine other times in the first chapter, is added to the opening *be-re'shit* to total what are called the 'ten *ma'amarot*', 'the ten utterances' through which everything was created.[3] There will be occasion to return to these ten afterwards, but the remarkable status of the first 'utterance' (*be-*

---

[1] The important Syriac, Armenian, Ge'ez and Georgian textual traditions exceed my competence and will not be treated in this work.

[2] Cf. Psalms 33: 6, 'By the word of the Lord were the heavens made; and all their hosts by the breath of His mouth.'

[3] Talmud *Megillah* 21b:10, 'The Gemara asks: What are these ten utterances? Presumably, they are the utterances introduced by the words "and God said" in the story of Creation in the first chapter of Genesis. However, there are only nine of these utterances and not ten. The Gemara answers: The expression: "In the beginning" is also considered an utterance… which indicates that the first utterance of Creation was the general creation of the entire universe.'

re'shit), which seems to not be one at all, should not escape our attention as we ascertain the role of letters and numbers in this cosmogony.

According to several rabbinical authorities, the Torah itself was created before the universe,[4] and Rashi comments that 'God created the world for the sake of the Torah.' In the *Midrash Tanḥuma'* (Bere'shit 1:1), we find that 'when the Holy One, blessed be He, was about to create this world, He consulted (*hitya'ets*) the Torah before embarking upon the work of creation.' This 'consultation' is specified further in *Tanḥuma' Buber* (Bere'shit 5:1), 'While God was creating the world, he was looking at the Torah,' which was like a trusted model (*amon*), a word cognate to the liturgical *amen*.[5] And a few lines below, 'How was the Torah written? It was written with letters of black fire on a surface of white fire.' In *3 Enoch*,[6] it is specified that these letters, 'by which' or 'through which' were created heaven and earth, mountains and hills, seas and rivers (and a long list…), were 'engraved with a flaming style on the Throne of Glory' (*ḥaquqot be-'eṭ shelahevet 'al kise' ha-kavod*).[7] Summing up then, we have, even before the creation of the universe, the Torah as a model for divine creation, as a template constituted by letters of fire. Odeberg puts it succinctly in his edition of *3 Enoch*, 'all possible *otiyyot* and *shemot* [letters and names] are represented as contained in the Torah. "The letters of the Torah" is the technical term for the cosmical letters.'[8]

---

[4] *Bere'shit Rabbah* 1: 4, '"In the beginning of God's creating…" – Six things preceded the creation of the world […] The Torah and the Throne of Glory were created.' See also J. L. Kugel, *Traditions of the Bible: A Guide to the Bible As It Was at the Start of the Common Era* (Harvard University Press, 1998), 46-7, for references to the Torah as Wisdom personified.

[5] Note also here the related word *aman*, a workman or artificer. In V. Armenteros Cruz, 'Midrás Tanḥuma Buber a Génesis: traducción, notas y análisis estructural-hermenéutico' (PhD diss., Universidad de Granada, Departamento de Filología Semítica, 2006), 93, other meanings of *amon* are reported from *Midrash Rabbah*, like a 'tutor' and a 'pedagogue' – all having to do with the basic idea of 'trust'. Reference is also made to Philo's doctrinal parallel, which I shall be discussing soon.

[6] H. Odeberg, *3 Enoch: Or, The Hebrew Book of Enoch* (Ktav Publishing House, 1973), pp. 54–55 Heb.

[7] The 'engraving' method corresponds exactly to the Gr. γραφεῖν and its production, γράμματα.

[8] Odeberg, *3 Enoch*, 172.

Now, there is an alternative letter-related exegesis of the first verse which does not have to do with the entire alphabet but only with the letters of the divine name.[9] The letters of the Divine Name are the constituents of the world, especially the letters of YHWH and ʾEHYE (…), and even more exclusively the letters *Yod* and *He*. A convoluted explanation commences involving several passages, as follows.

We start with Gen. 1:1, בראשיתבראאלוהים. This verse is normally parsed as *be-reʾšhit bara' elohim*, 'In principle God created', but the reading reported from several Mishnaic sources uses a different vocalisation: *bara' shet*, 'God created six,' referring to the six letters of a holy name. This is then compounded with Is. 26:4, ביה יהוה צור עולמים , which is usually read as *be-yah YHWH tsur ʿolamim*, 'in Jah Jehovah is a rock of the worlds,' but becomes *be-YHYHWH tsawar ʿolamim*, 'He formed the worlds by YHYHWH,' so the 'six letters' mentioned in Gen. 1:1 would be YHYHWH, what translators make into 'Jah Jehovah' or 'the LORD GOD' or 'the LORD, the LORD'. Finally, to round off and support this interpretation, Gen. 2:4 is given an unusual reading too: the verse speaks of 'the generations of heaven and earth when they were created (*be-hibar'am*),' but this last word בהיבראם is read instead as *be-HY bara'am*, בהי בראם, 'He created them by HY.'

What is clear at the end of this complex explanation, rather Kabbalistic *avant la lettre*, is that the 'letters of creation' would be the six letters י ה י ה ו ה, and not necessarily the entire alphabet. It will be noted how this special status of a subset of letters is comparable to the special cosmological status of some Greek letters, like the vowels which are identified with the seven planets.[10]

Another frequent and relevant association to the primordial *reʾšhit* and the Hexameron is that of the construction of the tabernacle (*mishkan*) or the pitching of a tent (*ohel*), because 'the Tabernacle is equal to the creation of the world itself.'[11] The image is architectonic, and is found with the alternative association to the building of a house – 'May our master teach us the benediction one should offer upon the building of a new home!' (*ha-*

---

[9] See *Bereʾšhit Rabbah* 12, 2; *The Letters of Rabbi Akiba* (Washington DC: Government Printing Office, 1897), 713, and for other references, Odeberg, *3 Enoch*, 34-5.

[10] See above, pp. 28 and 29.

[11] *Midrash Tanḥuma'*, Pekudei 2:3. See also *Bemidbar Rabbah*, 12:13.

boneh bayt ḥadash).[12] One of the relevant scriptural associations is Psalm 119:90–91, 'Thou hast established the earth, and it standeth' (*konanta erets wa-taʿamod*). Here we may remember how in one of the Greek commentaries the letters were compared to building blocks, and how the crucial term στοῖχος designates a course of bricks in building.

Finally, from a numerical point of view, there is a notable explanation in *Midrash Tanḥuma'* (Bere'shit 5), as to why the account of creation opens with a *bet*: 'The letter *bet* is employed in order to teach man that there are two worlds, this world and the hereafter.' This explanation is based on the numerical value of *bet*, two, and it seems clear that the question is equivalent to saying 'Why does the Torah open with two?' The identity between letter and number is a matter of fact.

1. Psalm 33:6

A passage often mentioned in the Talmud when discussing the creation is Psalm 33:6,[13] בדבר יהוה שמים נעשו וברוח פיו כל־צבאם, 'By the word of the Lord were the heavens made; and all the host of them by the breath of his mouth.' This is said to indicate 'that all of creation came into existence through a single utterance, after which all matter was formed into separate and distinct entities by means of the other nine utterances,' since 'the first utterance of Creation was the general creation of the entire universe.'[14] And specifying, 'the hosts of heaven are the angels, who are created from the mouth of God.'[15] This concept of a primordial moment *in divinis*, from which all reality is later 'expanded' or 'elaborated', reminds of the cosmogonic primacy accorded to the monad among the Pythagoreans, and to the related grammatical exegeses about the alpha among Greek grammarians. In one of the above pages,[16] we had a glimpse into the relation between letter-numbers and angels, but here this relation may be specified: the first letter-number belongs as if to a different order altogether, while the rest of the decad-alphabet would be formed by 'angelic' beings.

---

[12] *Midrash Tanḥuma'*, *l.c.*, and Bere'shit 4:1.

[13] Cf. for instance, Ro'sh Hashanah 32a:19 and Megillah 21b:10.

[14] Megillah 21b:10.

[15] Ḥagigah 14a:3.

[16] See p. 23.

In fact, it is a common doctrine[17] that from every one of God's utterances an angel is created. In line with this, some ingrained forms of ancient Jewish angelolatry seem to have been among the devotions of the Colossians, in Asia Minor, and thus the object of criticism of the Pauline epistle.[18] I shall have occasion to dwell further on this angelic comparison in later sections.

II. Exodus – Bezalel

In Exodus 31:2–5, we find this remarkable testimony when on top of Sinai Moses is told:

> See, I have called by name Bezalel the son of Uri, son of Hur, of the tribe of Judah, and I have filled him with the Spirit of God, with proficiency and intelligence, with knowledge and all *craftsmanship* (*mal'akhah*), to *design* designs (*laḥshov maḥshavot*), to work in gold, silver, and bronze, in *carving* (*ḥaroshet*) stones for setting, and in *carving* wood, to work in every *craft* (*mal'akhah*) [highlighting mine].

רְאֵה קָרָאתִי בְשֵׁם בְּצַלְאֵל בֶּן אוּרִי בֶן חוּר לְמַטֵּה יְהוּדָה: וָאֲמַלֵּא אֹתוֹ רוּחַ אֱלֹהִים בְּחָכְמָה וּבִתְבוּנָה וּבְדַעַת וּבְכָל מְלָאכָה: לַחְשֹׁב מַחֲשָׁבֹת לַעֲשׂוֹת בַּזָּהָב וּבַכֶּסֶף וּבַנְּחֹשֶׁת: וּבַחֲרֶשֶׁת אֶבֶן לְמַלֹּאת וּבַחֲרֶשֶׁת עֵץ לַעֲשׂוֹת בְּכָל מְלָאכָה:

This is repeated almost verbatim at 35:30, when Moses engages Bezalel to do the job, and it is later referred to in ch. 36 when the building work is undertaken.

The crucial beginning of verse 4, with the cognate accusative **לחשב מחשבת**, which I translate as 'to design designs', was paraphrased in the *Septuagint* as διανοεῖσθαι καὶ ἀρχιτεκτονῆσαι, bringing out both the epistemological and technical aspects of **חשב**, which has an arithmetic basic meaning of computation and calculation. The same expression was rendered into the Latin of the *Vulgate* as *ad excogitandum*, which, like 'design', does not imply necessarily the idea of calculation in the original – the arithmetic nuance was lost in the Latin.

I have highlighted above the terms used in this passage for carving and craft because of the relation they have with the creating, or rather shaping, power of number we encountered above in Nicomachus's description of

---

[17] See Ḥagigah 14a:71, and also Odeberg, *3 Enoch*, 34.

[18] See M. Simon, 'Remarques sur l'angélolâtrie juive', *Comptes rendus des séances de l'Académie des Inscriptions et Belles-Lettres* 115, no. 1 (1971): 127.

the cosmogonic role of number, but what is really relevant for us is what the Talmud (Berakhot 55a3) has to comment on this passage:[19]

Rab Judah said in the name of Rab: Bezalel knew how to combine the letters by which the heavens and earth were created. It is written here (Ex. 35), 'And He hath filled him with the spirit of God, in wisdom and in understanding, and in knowledge.'

אמר רב יהודה אמר רב יודע היה בצלאל לצרף אותיות שנבראו בהן שמים וארץ כתיב הכא (שמות לה) וימלא אותו רוח אלהים בחכמה ובתבונה ובדעת

Following the Exodus text, we would have expected to see that the heavens and earth were 'designed, calculated, devised' (all translations of *ḥashav*),[20] but instead it is remarkable how the verb used here for creation is **נבראו** *nivra'u*, passive of *bara'*, usually reserved in theology for *creatio ex nihilo*, but with the alternative meaning of 'set apart', 'analyse' – 'the letters into which heavens and earth are decomposed.'[21] In addition to this, on the same Talmud page, Rashi comments that this is said of the letters, 'regarding their combination as mentioned in *Sefer Yetsirah*.' This further complicates the determination of the kind of creative act envisaged in this demiurgic text, by establishing a link to **יצר** *yatsar*, yet another alternative for crafting from pre-existent matter, as is also the idea of 'combining', *tsaref*.

Something else worthy of note is the etymology and ancestry of Bezalel. He is 'by the shade of God', *be-tsel-El*,[22] and he is son of *Uri*, 'my light',

---

[19] See *Midrash Rabbah*, ed. H. Freedman, M. Simon and J. J. Slotki, 10 vols. (London: Soncino Press, 1939) and *Talmud Bavli: the Schottenstein edition : the Gemara : the classic Vilna edition, with an annotated, interpretive elucidation, as an aid to Talmud study*, ed. Y. S. Schoor, C. Malinowitz and H. Goldwurm, 72 vols., ArtScroll Series (New York: Mesorah Publishers, 1990-2005). Also valuable references in M. L. Munk, *The Wisdom in the Hebrew Alphabet: the Sacred Letters as a Guide to Jewish Deed and Thought*, ArtScroll Series (New York: Mesorah Publications, 1983), and a most helpful online resource, *Talmud Bavli (Soncino Babylonian Talmud)*, ed. I. Epstein (20 July 2016).

[20] Cf. B. Davidson, *The Analytical Hebrew and Chaldee Lexikon*, Regency Reference Library (London: Samuel Bagster & Sons, 1848), s.v. *ḥashav*.

[21] For this basic meaning 'to separate, divide, cut', see E. van Wolde and R. Rezetko, 'Semantics and the Semantics of **ברא**: A Rejoinder to the Arguments Advanced by B. Becking and M. Korpel', *Journal of Hebrew Scriptures* 11 (January 2011).

[22] For this interpretation and later developments, cf. M. Idel, 'Reification of Language in Jewish Mysticism', *Mysticism and Language*, 1992: 46.

providing a new reference to the luminous nature of the letters, which 'make the mind bright' as we had found earlier.

III. Counting the Glory

An important occurrence of **ספר** *safar*, a crucial triliteral root in our research, which combines the meanings of writing and counting, is found at the beginning of Psalm 19,

> The heavens recount the glory of God, and the sky tells of the work of His hands.
> הַשָּׁמַיִם מְסַפְּרִים כְּבוֹד אֵל וּמַעֲשֵׂה יָדָיו מַגִּיד הָרָקִיעַ

What I would single out here is that the semantic complexity at the basis of **מספר** *mispar*, 'number', and **מספר** *mesaper*, 'to recount', is strictly analogous to the one found in English and other Indo-European languages when we speak of giving an account or doing accounts, like Fr. *compter/raconter*, Sp. *un cuento/la cuenta, por favor*.[23] There is also the same ambiguity of the verb 'to tell', as in 'telling a story', or in a 'teller machine', and even stronger, that is, harder to distinguish, in 'telling our beads', which finds an inverse of sorts in the expression to 'count prayers'.

Another relevant passage on this topic is Gen. 5:1, **זה ספר תולדת אדם** 'This is the record of Adam's line,' a verse considered by Ben Azzai 'the major principle of the Torah,'[24] in which the word *sefer* is a major object of commentary and is explained as meaning a 'record' or a 'list' rather than a book. Luzzatto explains succinctly: **זה ספר: ספירה וסיפור**, '*Sefer* is a tally [*sefirah*] and a narrative (*sippur*).'[25]

All this is meant to point out that there is hardly any disagreement here from a Pythagorean-Platonic cosmological point of view. In *Epinomis* 978b7ff., the answer to the question πῶς ἐμάθομεν ἀριθμεῖν, 'How have we learnt to count?' is precisely the order and regularity of the celestial movements. Referring to the psalm above, Ibn Ezra comments that 'no one can understand this passage who has not the science of the stars.'

---

[23] For more examples and detailed analysis in the context of narratology, see J. García Landa, 'Narrating Narrating: Twisting the Twice-Told Tale', in *Theorizing Narrativity*, ed. J. Pier and J. García Landa (Berlin/Boston: Walter de Gruyter, 2008), 420-21.

[24] Cf. the *Torat Kohanim Parshat Kedoshim*.

[25] Shadal on Genesis 5:1. The *s-f-r* root of *sippur*, inasmuch as it refers to a narrative, brings to mind the classical Greek term στοιχηγορέω, 'to tell a story in regular order,' 'with στοῖχος.'

Rashi's commentary to this first verse brings together some of the different meanings:

The Psalmist himself explains the matter below: 'There is neither speech nor words' [19:4]. They do not speak with the creatures [they are inaudible] except in the sense that 'their radiation goes forth throughout the earth' [19:5] and they give light to the creatures, and thereby the creatures recount the glory of God and give thanks and bless [Him] for the luminaries.

המשורר עצמו פירש את הדבר "אין אומר ואין דברים" - אינן מדברים עם הבריות אלא מתוך ש"בכל הארץ יצא קום" ומאירים לבריו מתוך כך מספרים הבריות כבוד אל ומודים ומברכין על המאורות

Aside from other aspects, here we encounter again the luminosity of the letter-numbers, this time made explicit in an astronomical fashion: the heavenly bodies like a supernal writing which recounts the glory of God; when the creatures perceive this radiation, they in turn do the recounting.

IV. The Potter of Light

Another important *Tanakh* passage is Jeremiah 18:6,

O house of Israel, cannot I do with you as this potter? saith the Lord. Behold, as the clay is in the potter's hand, so are you in my hand.

הֲכַיּוֹצֵר הַזֶּה לֹא־אוּכַל לַעֲשׂוֹת לָכֶם בֵּית יִשְׂרָאֵל נְאֻם־יְהוָה הִנֵּה כַחֹמֶר בְּיַד הַיּוֹצֵר כֵּן־אַתֶּם בְּיָדִי

This verse is directly related to Isaiah 45:7, a formidable self-characterisation of God, through the use of the word *yotser*, the 'potter' in Jeremiah, and in Isaiah the attribute of the divine subject: 'I form,'

I form light and set darkness apart; I make peace and set evil apart; I am the Lord, who does all these things.[26]

יוֹצֵר אוֹר וּבוֹרֵא חֹשֶׁךְ עֹשֶׂה שָׁלוֹם וּבוֹרֵא רָע אֲנִי יְהוָה עֹשֶׂה כָל אֵלֶּה

The relevance of these verses for us has to do with the use of the above-mentioned root **יצר** *yatsar*, 'to shape, fashion, form', or in a general sense 'to create' as a craftsman does. This imagery became incorporated into liturgical life in the *Yotser Or*, 'Creator of Light', also known as *Birkat*

[26] Regarding the translation of *bara'* as 'set apart', see Wolde and Rezetko, 'Semantics and the Semantics of **ברא**', 19 and *passim*.

Yotser, 'Blessing of Creation', the first of the two blessings recited before the *Shema* during the morning religious services.

Blessed are you, Lord our God, King of the universe, who forms light and creates darkness, who makes peace and creates all things. Blessed are you Lord, who forms the luminaries.

בָּרוּךְ אַתָּה יְיָ אֱלֹהֵנוּ מֶלֶךְ הָעוֹלָם, יוֹצֵר אוֹר וּבוֹרֵא חֹשֶׁךְ, עֹשֶׂה שָׁלוֹם וּבוֹרֵא אֶת הַכֹּל. בָּרוּךְ אַתָּה, יְיָ, יוֹצֵר הַמְּאוֹרוֹת

The **יוצר** *yotser* as a particular type of craftsman is here implicitly referring to craftsmen and their arts in general, but the synecdoche became explicit centuries later in the *piyyut Ka-ḥomer*, still sung at Yom Kippur, in which God is invoked as a potter, a stonecutter, a blacksmith, a sailor, a glass-blower, an embroiderer and a silversmith.[27]

V. Acrostics

A literary device in the *Tanakh* which is significant for this research is the alphabetic acrostic or *abecedarium*, a series of verses or stanzas in which every unit starts with a letter of the alphabet in sequential order. The origin of acrostics is attributed by Rabbinic tradition to Solomon,[28] but this kind of composition is found already in Akkadian poetry, and it was common in Syriac, Greek, Roman and later Byzantine literature.[29] The best known biblical example is Psalm 119, where from *alef* to *taw*, every letter presides over eight successive verses, for a total of 176 verses. Other important alphabetic acrostics include Psalm 145, the eulogy of the good

---

[27] For an erudite treatment of this multiple demiurgic symbolism, see J. Hani, *Les Métiers de Dieu: préliminaires à une spiritualité du travail* (Paris: Jean-Cyrille Godefroy Editions, 2010); see also L. Roche, 'Dieu créa l'artiste à son image : Le thème du Dieu-artiste dans la théorie artistique moderne (XVe-XVIIIe siècle)' (master's thesis, Sorbonne, Paris IV, 2012), 18ff.

[28] Song of Songs Rabbah 1:7.

[29] For specific references and general bibliography, see R. Marcus, 'Alphabetic Acrostics in the Hellenistic and Roman Periods', *Journal of Near Eastern Studies* 6, no. 2 (1947): 109–115, A. Kadelbach, 'Das Akrostichon im Kirchenlied: Typologie und Deutungsansätze', *Jahrbuch für Liturgik und Hymnologie* 36 (1996): 176, and R. Van der Spuy, 'Hebrew Alphabetic Acrostics – Significance and Translation', *Old Testament Essays* 21, no. 2 (2008): 513–532.

wife in Proverbs 31, and the first four chapters of Lamentations. In this last example, the alphabet is set out complete four times, one after another.[30]

But beyond compositional details, what is of main value in the light of my research is the meaning, the purpose of the alphabetic acrostic. This formal structure used to appear as an oddity to modern scholars, who tried to justify its use mostly as a didactic mnemonic device,[31] on the assumption that aesthetic grounds alone could not justify such 'an impediment to artistic and poetic expression.'[32] Now contemporary scholarship has been consistently widening its views regarding these acrostics, bringing in explanatory theories from cognitive sciences[33] and allowing for more comprehensive and historically-aware literary judgements.[34] I shall simply add here some remarks from the very particular angle of my research, hoping to contribute to the effort at understanding these acrostics in their own historical context. I would like to suggest that we have enough testimonies and comparative data to allow for more than a resigned guess.[35]

First we have some old testimonies:

The expression 'from *alef* to *taw*' is found repeatedly in Rabbinic literature to mean 'from A to Z', 'entirely', as in 'Abraham performed the law from *alef* to *taw*,'[36] and as in the commentaries to Daniel 9:11, 'Israel has transgressed your law' עברו את־תורתך. Lamentations Rabbah (1:20) and *3 Enoch* (44:9), among other sources, explain that it means 'they have transgressed all the letters in the Torah,' reading the accusative preposition of *et toratekha* as the abbreviation of the alphabet. A correct translation of Daniel's verse would accordingly be 'Israel has transgressed the A–Z of

---

[30] See Lamentations Rabbah 5.

[31] Cf. Marcus, 'Alphabetic Acrostics', 110.

[32] See L. D. Maloney, 'A Word Fitly Spoken: Poetic Artistry in the First Four Acrostics of the Hebrew Psalter' (PhD diss., Dept of Religion, Baylor University, 2005), 188–9, for a wealth of relevant sources, and an overview of the current shift in the appreciation of the acrostic in Biblical scholarship.

[33] See Van der Spuy, 'Hebrew Alphabetic Acrostics', 516.

[34] Cf. Kadelbach, 'Das Akrostichon', 205, 'When games are understood not simply as pointless activities, but rather as the satisfaction of a primal human need which brings the *homo ludens* into harmony with himself, God and the World, only then can acrostic poetry also be perceived as a playful fulfilment of the human ideal.'

[35] See Van der Spuy, 'Hebrew Alphabetic Acrostics', 515.

[36] See *Midrash Tehillim* 112; *Yalquṭ Shimʿoni*, remez 871.

your law.' In later literature, the expression is also found referring to the blessings of God upon earth.[37]

The relation between this expression and the Greek 'alpha and omega' has been studied and associated to Isaiah 44:6, 'the Lord of hosts, I am the first and I am the last' יהוה צבאות אני ראשון ואני אחרון.[38] I am reminded here of the image of army ranks we had encountered in the first chapter, and I shall leave the Christian parallels for a later section. One noteworthy commentary to this verse is the following dialogue,

'What is the seal of God?'

'Truth [אמת].'

'And why truth?'

'Because "truth" has three letters: *alef*, the first letter; *mem*, the middle one; and *taw*, their end.'[39]

Now, considering the dual character of the letter-numbers we have been studying, it seems evident that an acrostic is not only a way of alphabetically sorting lines or paragraphs, but also *and simultaneously* an enumeration. Considering the qualities of the στοιχεῖα we have already listed, it is easy to agree with the cognitive scientists when they note how the alphabetic acrostic communicates 'a well-defined *order*, a *finite structure* and the sense of a complete unit and *wholeness*'.[40] Considering the elevated cosmological rank of letters and numbers, it is hard to ignore that such an enumeration, in the liturgical context of the scripture, would not only serve a sort of cataloguing purpose, but that it is also a direct reference to the cosmic order and its attributes.

Drawing again from the *Timaeus* (32c5ff.), we can recall how, in the composition of the world, the Composer uses up every one of the four

---

[37] *Chidushei Agadot* to Bava Batra 88b (part of Vilna edition).

[38] R. H. Charles, *A Critical and Exegetical Commentary on the Revelation of St. John* (Edinburgh: T. & T. Clark, 1920), 20. Also a rare source used by Charles, J. C. Schöttgen, *Horae Hebraicae et Talmudicae in universum Novum Testamentum* (Leipzig: Hekel, 1733), 1086.

[39] Devarim Rabbah 1:10. Regarding this conclusive image of the seal, and also in its 'protective' aspect, cf. M. B. Sendor, 'The Emergence of Provençal Kabbalah: Rabbi Isaac the Blind's *Commentary on Sefer Yeẓirah*. Vol. 2, translation and annotation' (PhD diss., Near Eastern Languages and Civilizations, Harvard University, 1994), 15f.

[40] Van der Spuy, 'Hebrew Alphabetic Acrostics', 516, my italics.

(*sc.* elements), leaving nothing unused. This is related to what Lovejoy considered a major philosophical principle, his 'principle of plenitude',[41] according to which the universe is a *plenum formarum* in which the range of conceivable diversity is exhaustively exemplified, since the extent and abundance of the creation must be commensurate with the productive capacity of a 'perfect' and inexhaustible Source. This also gives us an opening onto a new field of correspondences, if we compare this principle with the Evangelic and Gnostic concept of a fullness *in divinis*, in Greek a πλήρωμα, 'like a completely coherent and comprehensive matrix, timeless, ungenerated, immaterial and perfect, of the physical cosmos'.[42] A key term related to this Pleroma in Gnostic literature is τύπος,[43] a 'stamp', an 'imprint' or simply a 'model', used either to describe entities within the Pleroma as *types* (models) of lower entities, or to describe the lower phenomena of this world as *types* (impressions) of entities in the Pleroma – this has to do with the same fundamental ambiguity inherent to the craft of printing that we have in the English term 'impression', and to which I shall soon have occasion to return.[44] After this consideration, it is easier to see to what extent there is a connection between 'the seal of God' of the previous page and the plenitude of the alphabet.

VI. Summary

What stands out very clearly from the above pages is that the *Tanakh* and all its commentaries through the centuries not only include as a major theme the cosmogonic power of speech, or at least of divine speech, but also that the attention to the relevance of the elements of that speech is embedded formally in the form of *abecedaria* and has also been commented upon

---

[41] See A. O. Lovejoy, *The Great Chain of Being: A Study of the History of an Idea*, 2001 reprint (Cambridge, MA/ London: Harvard University Press, 1964), 65.

[42] J. Dillon, '*Pleroma* and Noetic Cosmos: A Comparative Study', in *Neoplatonism and Gnosticism*, ed. R. T. Wallis and J. Bregman, Studies in Neoplatonism: Ancient and Modern 6 (SUNY Press, 1992), 100. I should note that for the purpose of this work, and *pace* Dillon, the Talmudic and other Rabbinic references discussed in previous sections will be considered enough evidence of a 'purely Jewish' idea of 'a whole, articulated archetypal world, by reference to which, as a pattern, God makes this one.'

[43] 'A virtual synonym for the more Platonic *eikon*', see *ibid.*, 107.

[44] For a renowned typographer's perspective and reflections on the relation between stamp and printing press, see J. Tschichold, *Der chinesische Stempel. Ursprung des Buchdrucks* (Basel: Bucherer, Kurrus & Co, 1972).

from very early, like in the Talmud passage regarding Bezalel, and the passages of *3 Enoch*, estimated to date between the fourth and seventh centuries AD.

Later in this chapter, I shall introduce very important Jewish textual traditions which, although not so explicitly connected to the *Tanakh*, shed more light on our central topic.

For the time being let us retain from the above quotations: the consideration of a divine speech or script, the inextricable unity between the concepts of telling and counting, the cosmogonic aspect of the letters of the divine name, the connection between technical creativity and light, and the relation between a certain angelology and the basic elements of creation.

B. Philo

As mentioned in the previous chapter (see above, p. 71), Philo stands as a crucial figure in the development of Hellenistic and Jewish philosophy and exegesis. It is as if from his particular intellectual vantage point, being conversant with both the Greek tradition and the Jewish scriptures, he had been able to bring the characteristically autonomous philosophical discourse to bear on Biblical hermeneutics, while at the same time enriching Greek Hellenistic cosmology with elements of Jewish origin. All this from a distinctly 'Platonic' doctrinal position which gave rise to the Pythagorean associations, as evident, among other works, in his Περί τῆς κατά Μωϋσέα κοσμοποιίας, *The Making of the World according to Moses* (*De opificio mundi*),[45] which discusses the creation of the world according to the Genesis hexaemeron. It is perhaps because of this middle ground he occupied – he has been dubbed 'a concordist between the Bible and *Timaeus*' –[46] that he was neither incorporated into the roster of Greek philosophers nor to the Jewish rabbinical authorities, and even his supposed Hebrew name, Jedediah (ידידיהו), seems to be a rather late Italian

[45] See E. Filler, 'תאור הבריאה על-ידי פילון לאור תורת המספרים הניאופיתגוראית (Description of the Creation by Philo in the Light of The Neopythagorean Theory of Numbers)', *Daat: A Journal of Jewish Philosophy & Kabbalah*, no. 62 (2008): 5–25.

[46] See G. González Rabassó, '*Subtilitates naturae:* Continuïtats i ruptures a la cosmologia d'Hildegarda de Bingen' (PhD diss., Facultat de Filosofia, Universitat de Barcelona, 2015), 96.

scholarly whim. As pointed out by Bentwich,[47] Philo was remembered as 'the Jew' ('Philo Judaeus') by the outer world, but as 'Jedediah the Alexandrian' (ידידיהו אלכסנדרי) by his own people.

In any case, the doctrinal relations between Philo, Plato and the Pythagoreans seem to have been very clear for the Church Fathers. St Jerome reports the already mentioned popular saying, ἢ Πλάτων φιλωνίζει, ἢ Φίλων πλατωνίζει.[48] Clement of Alexandria called Philo repeatedly 'the Pythagorean', an epithet which Runia has examined in detail[49] to conclude that rather than referring to the arithmological exegesis so common in Philo's works, and despite the extensive use of the 'Bible of the Platonists' (Plato's *Timaeus*), 'Pythagorean' simply meant that that there is a dominant Platonist element in Philo's thought. This would be related to the frequent association between Plato and Pythagoras.

It is worth noting, to further compose the view, these lines also in the *Stromata* (1.22.150),

> Νουμήνιος δὲ ὁ Πυθαγόρειος φιλόσοφος ἄντικρυς γράφει· τί γάρ ἐστι Πλάτων ἢ Μωυσῆς ἀττικίζων;
>
> Numenius, the Pythagorean philosopher, expressly writes: 'What is Plato, but Moses speaking in Attic Greek?'

Given subsequent developments in doxography, especially Jewish and Islamic, the following approximation would not seem to be wide of the mark:

$$\text{Pythagoras} \approx \text{Plato} \approx \text{Philo} \approx \text{Moses}$$

But let us leave this intriguing community for the moment, and turn immediately to those themes in Philo which might justify it, and which relate to what we have been studying.

I. On the Making of the World

After speaking in detail of the materials of a construction, like stones and wood, Philo turns to their symbolic correspondence,

---

[47] See all the relevant refs. in R. Marcus, 'A 16th Century Hebrew Critique of Philo', *Hebrew Union College Annual* 21 (1948): 29–71, esp. pp. 29–37.

[48] Also recorded early in Isidore of Pelusium, see D. T. Runia, 'Why Does Clement of Alexandria Call Philo "The Pythagorean"?', *Vigiliae Christianae* 49, no. 1 (1995): 15.

[49] *Ibid.*, 10ff.

μετελθὼν οὖν ἀπὸ τῶν ἐν μέρει κατασκευῶν ἴδε τὴν μεγίστην οἰκίαν ἢ πόλιν, τόνδε τὸν κόσμον· εὑρήσεις γὰρ αἴτιον μὲν αὐτοῦ τὸν θεὸν ὑφ᾽ οὗ γέγονεν, ὕλην δὲ τὰ τέσσαρα στοιχεῖα ἐξ ὧν συνεκράθη, **ὄργανον δὲ λόγον θεοῦ δι᾽ οὗ κατεσκευάσθη**, τῆς δὲ κατασκευῆς αἰτίαν τὴν ἀγαθότητα τοῦ δημιουργοῦ.

Moving on from these particular fixtures, consider now the greatest house or city, namely, this world: you will find that God is its cause (αἴτιον), by whom it came into being, that the materials (ὕλη) are the four elements (στοιχεῖα), of which it is composed (συνεκράθη); *that the instrument* (ὄργανον) *is the word* [*or reckoning*] (λόγος) of God, by means of which *it was set up* (κατεσκευάσθη – *furnished, arranged*); and the object of the building you will find to be the display of the goodness of the Craftsman.[50]

The 'elements' are mixed like ingredients in a recipe, and the 'word' is the instrument. Now, that Word-Reckoning surely is also formed by *stoicheia* (letter-sounds, numbers) of another level. We have here again, more clearly, two implicit levels of *stoicheia*, the material meaning, and the 'noetic' uncreated one, or perhaps 'formed not yet created'. It is worth remembering how we had found in the first chapter that the letters were a representation of the heavens, whereas now, with the world elements modelled on a 'primordial printout' (ἀρχέτυπον) *in divinis*, there would seem to be an inversion. As mentioned above, this would fit with the alternation between mould and cast which characterises printing techniques.

In another passage, Philo asks the reader to think of God's creation as that of an architect,

ὡς ἄρα τὴν μεγαλόπολιν κτίζειν διανοηθεὶς ἐνενόησε πρότερον τοὺς **τύπους** αὐτῆς, ἐξ ὧν κόσμον νοητὸν συστησάμενος ἀπετέλει καὶ τὸν αἰσθητὸν παραδείγματι χρώμενος ἐκείνῳ. καθάπερ οὖν ἡ **ἐν τῷ ἀρχιτεκτονικῷ προδιατυπωθεῖσα πόλις** χώραν ἐκτὸς οὐκ εἶχεν, ἀλλ᾽ **ἐνεσφράγιστο** τῇ τοῦ τεχνίτου ψυχῇ, τὸν αὐτὸν τρόπον οὐδ᾽ ὁ ἐκ τῶν ἰδεῶν κόσμος ἄλλον ἂν ἔχοι τόπον ἢ τὸν

Just as when he thought through the construction of a great city, and he conceived first its *types/characters* [a blueprint or mould], from which he would compose and bring to completion a noetic world, which he would then use as a paradigm for the perceptible world, similarly, just as the city, *previously impressed* (προδιατυπωθεῖσα) *in the architectonic paradigm*, was not situated anywhere, but *was stamped* solely in the soul of the craftsman, neither could the world of the ideas have any other location

[50] *De cherubim*, 127, 1.

θεῖον λόγον τὸν ταῦτα διακοσμήσαντα·	except the divine reckoning (λόγος) which had devised (διακοσμήσας) them.[51]

We find here again in several instances the important image of the 'impression' or 'stamping' related to the word τύπος, with the addition of σφραγίς, 'seal', to the same semantic group.[52] The origin of this imagery goes back to the *Timaeus* (cf. 39e7, 50c-d), with further developments in Middle Platonism under the influence of the Stoa.[53]

Another important aspect of the divine design is order, τάξις, an 'arrangement', which in the first chapter I have shown to be, according to the Greek grammarians, essential to the concept of στοιχεῖον. The following passage makes explicit once again the relation between τάξις and ἀριθμὸς, but now in a cosmogonic context.

Ἓξ δὲ ἡμέραις δημιουργηθῆναί φησι τὸν κόσμον, οὐκ ἐπειδὴ προσεδεῖτο χρόνων μήκους ὁ ποιῶν (...) ἀλλ' ἐπειδὴ τοῖς γινομένοις ἔδει **τάξεως**. **τάξει δὲ ἀριθμὸς οἰκεῖον**.	He [Moses] says that the world was crafted in six days, not because the Maker needed any length of time (…) but because the new things required *arrangement* [order]; *and number is akin to arrangement.*[54]

Given the features of Philo's cosmogony, it should be clear that the usual translation of κοσμοποιία as '*creation* of the world', though perhaps not inaccurate in view of the Greek, would benefit from a more nuanced approach. What the texts contain is the description of the 'making', the 'fashioning', or the 'crafting' of the world from the point of view of a master craftsman, especially an architect, while the word 'creation' carries with it, especially in this context, the connotation of an *ex nihilo* process.[55]

---

[51] *Opif.*, 19–20. Cf. Runia, *On the Creation*, 139, 'the seal or mould (σφραγίς) first has to be engraved or marked out with markings (τύποι or χαρακτήρες) before it can be used to imprint form on receptive material. Because it is the prime source of the transferred design, it is also called the ἀρχέτυπον (literally "first or chief marking")', and see below.

[52] According to Chantraine, the origin of this word remains unclear in spite of various hypotheses, cf. P. Chantraine, *Dictionnaire étymologique de la langue grecque: histoire des mots* (Paris: Klincksieck, 2009), *s.v.* σφραγίς (hereafter cited as DELG).

[53] Cf. Runia, *On the Creation*, 139.

[54] *Opif.*, 13.

[55] About this controversial topic in Philo studies, see Runia, *On the Creation*, 152-3.

1. Archetype and Noetic Creation

The word 'archetype', which was current as a model, and had also been used in philosophical contexts in that general sense, acquires in Philo a meaning which seems to reflect the influence of his Jewish background.[56] We may not owe to Philo the first ever occurrence of the word 'archetype' in a metaphysical sense, for it had been used by some contemporary Platonists and by Stoic authors,[57] but it is particular to Philo that the 'archetype' is used with the full import of its printing connotation, with the notion of 'type' in the sense of imprint – the idea of stamping, or etching as explained above. Further down in *Opif.*, 25, we find,

δῆλον ὅτι καὶ ἡ ἀρχέτυπος σφραγίς, ὅν φαμεν νοητὸν εἶναι κόσμον, αὐτὸς ἂν εἴη [τὸ παράδειγμα, ἀρχέτυπος ἰδέα τῶν ἰδεῶν] ὁ θεοῦ λόγος.

It is plain that the archetypal seal, which we affirm to be the intelligible cosmos, would itself be the model and archetypal idea of the ideas, the Logos of God.
[trans. Runia]

To complete this topic, I would like to present another passage,

προλαβὼν γὰρ ὁ θεὸς [...] ὅτι **μίμημα** καλὸν οὐκ ἄν ποτε γένοιτο δίχα καλοῦ παραδείγματος οὐδέ τι τῶν αἰσθητῶν ἀνυπαίτιον, ὃ μὴ πρὸς **ἀρχέτυπον καὶ νοητὴν ἰδέαν ἀπεικονίσθη**, βουληθεὶς τὸν ὁρατὸν κόσμον τουτονὶ δημιουργῆσαι **προεξετύπου** τὸν νοητόν, ἵνα χρώμενος ἀσωμάτῳ καὶ θεοειδεστάτῳ παραδείγματι τὸν σωματικὸν ἀπεργάσηται, πρεσβυτέρου νεώτερον **ἀπεικόνισμα**, τοσαῦτα περιέξοντα αἰσθητὰ γένη ὅσαπερ ἐν ἐκείνῳ νοητά.

God, apprehending beforehand […] that there could not exist a good *imitation* without a good model, and that of the things perceptible to the external senses nothing could be faultless which was not *fashioned with reference to some archetypal idea conceived by the intellect*, when he had determined to create this visible world, cast first that one which is perceptible only to the intellect, in order that so using an incorporeal model formed as far as possible on the image of God, he might then make this corporeal world, a younger *likeness* of the elder creation, which should contain as many different perceptible genera as there are intelligible ones in the other world.[58]

In these lines the notion of likeness, model, copy and imitation stand out, all in relation to the first 'noetic' creation. Nothing comes to be directly, but rather mediated by this intermediary creation, whose author and crafting

---

[56] See TDNT, *s.v.* λέγω.

[57] Cf. Runia, *On the Creation*, 151.

[58] *Opif.*, 16.

are described in demiurgic and 'poietic' terms. We also encounter here again the notion of a quantitative correspondence between the ideal and the material realms, the 'principle of plenitude'.

2. The Model is Λόγος

This ideal noetic model is often referred to by Philo as the λόγος, a word that in his works expresses forcefully his own singular position between Hellenism and Judaism, as I have mentioned.[59] In the following passage, Philo explicitly lays bare what had remained implicit in previous paragraphs.

εἰ δέ τις ἐθελήσειε γυμνοτέροις χρήσασθαι τοῖς ὀνόμασιν, οὐδὲν ἂν ἕτερον εἴποι τὸν νοητὸν κόσμον εἶναι ἢ θεοῦ **λόγον** ἤδη κοσμοποιοῦντος· οὐδὲ γὰρ ἡ νοητὴ πόλις ἕτερόν τί ἐστιν ἢ ὁ τοῦ ἀρχιτέκτονος **λογισμὸς** ἤδη τὴν νοητὴν πόλιν κτίζειν διανοουμένου [...] τὴν γοῦν ἀνθρώπου γένεσιν ἀναγράφων [...] ὁμολογεῖ, ὡς ἄρα κατ' εἰκόνα θεοῦ **διετυπώθη**. εἰ δὲ τὸ μέρος **εἰκὼν εἰκόνος**, δῆλον ὅτι καὶ τὸ ὅλον· εἰ δ' ὁ σύμπας οὗτος ὁ αἰσθητὸς κόσμος, ὃς μείζων τῆς ἀνθρωπίνης ἐστίν, **μίμημα θείας εἰκόνος**, δῆλον ὅτι καὶ ἡ ἀρχέτυπος σφραγίς, ὃν φαμεν νοητὸν εἶναι κόσμον, αὐτὸς ἂν εἴη τὸ παράδειγμα, ἀρχέτυπος ἰδέα τῶν ἰδεῶν ὁ θεοῦ λόγος.

If you should wish to use words at their most naked, you would say that the noetic world is nothing but the *Logos* of God as he is actually engaged in making the world;[60] and a city too, when only perceptible to the intellect, is nothing but the *reckoning* of the architect, who is then and there designing to build another one perceptible to the external senses, on the model of that which is so only to the intellect […] Accordingly Moses, when recording the creation of man […] asserts expressly that he was *cast* in the image of God – and if the part is *image of an image*, then manifestly this is the case too for the whole. And if this entire perceptible world, which is greater than the human image, is a *representation of the divine image*, it is clear also that the 'archetypal seal', what we call the intelligible world, would itself be the paradigm, the archetype, the idea of ideas, the *Logos* of God.[61]

In this disclosure, the making of man and the world are compared, both in the image of the noetic reality, and finally a single name is given to that reality, the *Logos* of God. I shall soon have an opportunity to explore the developments of this Greek term in Christian theology, but

---

[59] See TDNT, *s.v.* λέγω, B-4.

[60] See Runia, *On the Creation*, 148–51, and p. 94 for the last part of the Greek paragraph.

[61] *Opif.*, 24–5.

it is important to point out that in this context, in which the discourse is about the divine all-possibility, the word is rife with its manifold senses, meaning inclusively, among others: collection, reckoning, calculation, account, consideration, enumeration, catalogue, narrative, word, speech. Additional insights into its meaning are obtained by the distinction from, and the partial semantic overlaps with the cognate λογισμός, 'reasoning, reckoning, counting'.

Finally, in *De mutatione*, 135, we find the same motifs further detailed and forcefully put as a rhetoric question,

τίνος ὁ δακτύλιος, ἡ πίστις, ἡ τῶν ὅλων σφραγίς, ἡ ἀρχέτυπος ἰδέα, ᾗ τὰ πάντ᾽ ἀνείδεα ὄντα καὶ ἄποια σημειωθέντα ἐτυπώθη; [...] ἆρ᾽ οὐχὶ μόνου θεοῦ;	Whose is the signet, the pledge, the stamp of all things, the archetype idea by which all things lacking form and quality were imprinted as meaningful signs […] if not God's alone?

3. Numbers: the Tetrad and the Decad

Philo's usage of numerology pervades his works. It is not that he uses isopsephy, but that he constantly appeals to the arithmetical properties of numbers in order to advance his explanations, and so, even though his Περὶ ἀριθμῶν is not preserved, we can have a very clear picture of the number doctrines he espoused. 'His testimony, in brief, is that the Greek *arithmetica*, as Nicomachus knew it and compiled it, existed also in Philo's day, and was accessible to and generally known by the well-educated man, even if he were not a professional mathematician.'[62]

As an example of his numerology, which gives also an insight into his arithmetic views, here is an important passage (*Opif.* 47) where he extols the virtues of numbers four and ten,

ὁ δ᾽ οὐρανὸς διεκοσμεῖτο αὖθις ἐν ἀριθμῷ τελείῳ τετράδι, ἣν δεκάδος τῆς παντελείας οὐκ ἂν διαμάρτοι τις ἀφορμὴν εἶναι λέγων καὶ πηγήν· ὃ γὰρ ἐντελεχείᾳ δεκάς, τοῦτο τετράς, ὡς ἔοικε, δυνάμει· εἰ γοῦν οἱ ἀπὸ μονάδος ἄχρι τετράδος ἑξῆς συντεθεῖεν ἀριθμοί, δεκάδα	Heaven in its turn was ordered with a perfect number, the four. You would not go astray in affirming that it is the principle and source of the all-perfect number ten; for what the ten is in actuality, the four, it would seem, is potentially. If the numbers from the unit to the four are added up, they will produce the ten. It forms the boundary

[62] F. E. Robbins, 'Arithmetic in Philo Judaeus', *Classical Philology* 26, no. 4 (October 1931): 361. See also Runia, *On the Creation*, 25ff.

γεννήσουσιν, ἥτις ὅρος τῆς ἀπειρίας τῶν ἀριθμῶν ἐστι, περὶ ὃν ὡς καμπτῆρα εἰλοῦνται καὶ ἀνακάμπτουσι.

for the infinitude of numbers, which wind around it like a turning post and turn back. [trans. Runia]

It is important to observe here that such a view of number ten as the axis on which revolves the 'infinitude of numbers' is what lies at the basis of the concept of Pythagorean 'roots' (πυθμένες) and the calculations based on them,[63] and it is, even more significantly for this research, a testimony to the vitality of the reverence accorded to the decad.

Finally, in the following reference are combined numeric symbolism and arithmetic understanding, to give an insight into the metaphysics of number at the basis of Philonian thought,

διαφέρει δὲ μονὰς ἑνὸς ᾗ διαφέρει ἀρχέτυπον εἰκόνος· παράδειγμα μὲν γὰρ ἡ μονάς, **μίμημα** δὲ τῆς μονάδος τὸ ἕν.

The monad differs from one like the archetype from its image, for the monad is the model, and one is the *representation* of the monad.[64]

It is clear that the monad, the dyad, the triad and so on up to the decad – which are the objects of arithmetic speculation – are only called numbers by extension, figuratively. In reality they are something different, and they belong to a paradigmatic level from where the numbers draw their appearance. [65]

II. Chapter Summary: Philo in Perspective

Philo is at a cultural crossroads, explaining the *beri'ah* (*creatio ex nihilo*) of the hexaemeron in the symbolic language of a *yetsirah*, or to put it in Greek terms, he is putting a *genesis* in the terms of a *poetic*. At the heart of his exegesis there is λόγος, combining in its many facets the basic order and hierarchy of the alphabet, and also its semi-divine nature and its intermediary function. It is doubtlessly in the order intrinsic to this λόγος where we find in Philo the closest functional equivalent to our alphanumeric στοιχεῖα.[66] When Philo uses the word στοιχεῖον itself, it

---

[63] See above p.50.

[64] K. Staehle, *Die Zahlenmystik bei Philon von Alexandreia* (Leipzig: Teubner, 1931), fr. 2.

[65] See below, p. 212.

[66] I may also mention in this regard the 'spermatic substances' and 'invisible patterns', σπερματικαί οὐσίαι which contain ἄδηλοι λόγοι (*Opif.* 43), mentioned on occasion of

refers to the 'material' elements, and not to the cosmogonic principles which inform the visible world. The brief grammatical passages where he uses the term exhibit the same basic alternation between the meaning of phoneme and written character which is found in other authors.[67]

As Philo constitutes a first monumental point of contact in cosmological doctrines between the Greek world and the Jewish tradition, I shall now move to another instance of the same conjunction, but one which would become incomparably more widespread and would begin not as a scholarly endeavour but as a religious movement, I mean the advent of Christianity.

A connection between Philo and Middle Platonist and Stoic philosophers has been mentioned, opening an entire new vista towards more or less contemporary developments in the Hellenic world.[68] However interesting these developments can be, I shall for the moment concentrate on pursuing the alphabetic thread into the early Christian literature, and only afterwards return to Greek philosophy in order to examine the fate of our concept in Late Platonic authors.

---

the creation of plants. Some scholars draw here clear parallels to the Stoic doctrine of *spermatikoi logoi*; see Runia, *On the Creation*, 56 and 184.

[67] *Agr.* 137; *Det.* 7; *Her.* 210; *Leg.* 3,121; *Mut.* 63; *Opif.* 126; *Sacr.* 76

[68] For the relevant references, see Runia, *On the Creation*, esp. 33, 139 and 184, where topics related to this research are treated.

Chapter 4

Christian Sources and Exegesis

A. Letters-Numerals of the Christic Word-Number

After the previous pages, and after the insights obtained in the second chapter about the root meaning of λόγος, it will hardly be surprising that we proceed to study how our concept appears in Christian doctrine and exegesis, given that at the very heart of this religion the figure of Christ is identified since the earliest times with a cosmic divine λόγος. The first and most important testimony to this in the Christian scriptures is the beginning of the Gospel of St John, which gave rise over the centuries to commentaries and doxological developments of all sorts.

Ἐν ἀρχῇ ἦν ὁ λόγος, καὶ ὁ λόγος ἦν πρὸς τὸν θεόν, καὶ θεὸς ἦν ὁ λόγος.
In the beginning was the *logos*, and the *logos* was with God, and the *logos* was God.

Given the present context, the best option is to leave λόγος untranslated, and thus to allow for the full import of its polysemy. By doing so, this Johannine cosmogonical account reveals with clarity its resemblance to a Pythagorean-Platonic creation *with* number, or *through* the word, as in the Genesis *ma'amarot*, or *by means of* a pattern as in Philo's architectural cosmogony. The semantic richness is aptly expressed by the Greek Fathers when they appeal to the text itself and affirm that 'no one can grasp the sense (νοῦς) of this Gospel who has not reclined his head on Jesus' chest and who has not received his mother Mary from him as his own mother.'[1] Another interesting note in the *Catenae* is that the verb ἦν should be understood as indicative of an eternal and everlasting being (τοῦ ἀεὶ καὶ ἀπείρως εἶναι).[2]

---

[1] J. Cramer, ed., *Catenae Graecorum patrum in Novum Testamentum*, repr. 1967 (Oxford University Press, 1841), 179.

[2] *Ibid.*, 180.

In any case, Augustine famously noted how *quod graece* λόγος *dicitur latine et rationem et verbum significat*, 'what is expressed by λόγος in Greek, is expressed in Latin by *ratio* and *verbum*.'[3] Quoting this very passage in his commentary to *De divinis nominibus*, Aquinas delves one step further into the meaning, explaining how *ratio* has four meanings: 1) *cognoscitiva virtus*, hence that God may be called *ratio*, comprehending 'every cognition, either reason, mind or wisdom and of everything in every way'; 2) *causa*, and God is so called not only as being *the* cause of everything, but – and this is Dionysius – as 'having gathered in himself primordially the causes of all things in a uniform way (μονοειδῶς)';[4] 3) *computatio*, a calculation or reckoning, as in Matt. 18:23–4, where a king is said to 'settle accounts';[5] and 4) *aliquid simplex abstractum a multis*, used precisely because the divine *ratio* is the most simple above all simplicity, and the most separate or abstracted from all things.[6]

I barely need to refer the reader to the correspondences in Philo above, and to other previous similar findings. I shall instead concentrate on the remarkable second point to steer my argument towards my main concern in the alphanumeric elements. The 'containing of the causes of all things' is specified by Aquinas, *non per modum compositionis, sed per modum uniformitatis et simplicitatis*,[7] 'not as they are within composites, but inasmuch as they are unidimensional and simple,' which in view of the divine στοιχεῖα can easily be thought to refer to the elemental quality of those secondary causes, as if on a list or row of simples. If this were so, we might expect to find elsewhere in the Christian tradition exegetical developments that pointed in this direction. And indeed we have several such developments, the first and most directly relevant of which I shall present in the following pages.

---

[3] Augustine, *De diversis quaestionibus*, §63.

[4] For another passage in Aquinas which edges even closer to the demiurgic understanding of *ratio*, much in the manner of Philo, 'as a ratio or *type* that preexists in the mind of the craftsman', see E. Pattaro, *A Treatise of Legal Philosophy and General Jurisprudence (Volume 1: The Law and The Right)* (Dordrecht: Springer, 2005), 322-3.

[5] *Rationem ponere*, trans. NRSV.

[6] See Aquinas, Saint Thomas, *In librum beati Dionysii De divinis nominibus expositio*, ed. C. Pera O.P. (Torino: Marietti, 1950), 277.

[7] *Ibid.*

I. Mysteria litterarum*: Textual History*

The *Mysteria litterarum* (*ML*) was first published in Europe in the late nineteenth century from a Coptic-Arabic bilingual manuscript.[8] A French translation of the Coptic was published by Hebbelynck in 1900/01.[9] Although a Greek Ms was known to be in Paris and mentioned by some authors who were interested in particular aspects of the text, it was only in 1980 that Paramelle studied this Greek witness and wished for an edition of the three versions together, Greek, Coptic and Arabic.[10] Bandt has now partially fulfilled his wish; she has established that the original is Greek, that it was translated into Coptic, and from there into Arabic. Her 2007 monograph includes a Greek text based on all known Greek and Coptic/Arabic Mss., a rich preliminary study and German translation. The final pages of the text are only extant in Arabic, and apparently go rather off topic ('obscure jusqu'au rebus', says Paramelle).

The authorship is attributed by a Greek Ms. to John of Damascus, by the Coptic to an Apa Seba (*Saba* in Ar.). Based on this, Amélineau had attributed this to St Sabas of Jerusalem (439–532), and others, even more specifically, to an author within the monastic community of St Sabas, namely Saint Eustathius of Galatia, who was a calligrapher by profession.[11] What all these conjectural authors have in common is their monastic life at the Great Lavra of St Sabas (Mar Saba), which continues to function to this day near Bethlehem. It has become conventional to speak of Ps.-Sabas as the author.

Being an original Greek work, it is quite remarkable that most parallels to its ideas are found in Jewish literature.[12] Bandt singles out three works in particular where the idea of creation related to the twenty-two letters is found, and each of them is related to a Prophet:

---

[8] Bodleian Ms. Huntington 393, dated 1393. For the most complete and recent history of the text, see Bandt, *Vom Mysterium*, and G. G. Stroumsa, '*The Mystery of the Greek Letters*: a Byzantine Kabbalah?', *Historia religionum* 6, no. 6 (2014): 35–44. There is also a recent online translation from the Coptic by Anthony Alcock.

[9] A. Hebbelynck, 'Les Mystères des lettres grecques', texte copte, traduction, notes, *Le Muséon*, nos. 19/20 (1900/1901): 5–36, 105–136, 269–300 and 5–33, 369–414.

[10] J. Paramelle, 'Christianisme byzantin', *Annuaire de l'École pratique des hautes études. V^e^ section, Sciences religieuses* 88 (1979): 379–386.

[11] Bandt, *Vom Mysterium*, 8.

[12] How much so is evident also from Stroumsa's mention of a 'Byzantine Kabbalah'.

1– *The Book of the Palaces* (*Sefer hekhalot* – henceforth *SH*) or *3 Enoch*
2– The *Sefer Yetsirah* (*SY*) – Abraham
3– The *Book of Jubilees* (*BJ*) – Moses

I have already quoted before several passages from the *SH*. As for the *BJ*, Bandt describes it as the 'earliest occurrence of the idea of relation between the Hebrew alphabet and the divine work of creation.'[13] She also observes that whereas in *ML* the relation between the shapes of the letters and the cosmic realities is metaphoric, the Hebrew letters are seen in Jewish tradition as the actual material of the creation; Hebrew is indeed the language of creation, the cosmogonic language, and the divine act of creation is equalled to an act of writing.

Regarding *SY* and Abraham,[14] attention is first drawn to the astronomical connections of Abraham, who came from Ur of the Chaldaeans (=astronomers). Abraham, however (and quite in agreement with Qur'anic material),[15] is special in that he submitted his astronomy to the power of the One God. Bandt quotes a remarkable passage of the *BJ* in which Abraham's *metanoia* is described in terms almost identical to the Qur'anic account. But I shall have occasion later to return in more detail to the significance of *SY*.

Regarding Moses, what is paramount is his 'authorship' relation to the Torah. Bandt cites familiar Jewish traditions according to which the Torah is considered the 'blueprint' of the cosmos and, even more specifically, the particular letters each have a cosmogonic function. According to a tradition already cited,[16] 'The Holy One, praised be He, said, "I need workers." The Torah said to Him, "Let me provide you with twenty-two workers, the twenty-two letters which are in the Torah, and I give each of them its due."'

1. Mysteria litterarum – *the text*

The larger part of *ML* is dedicated to a letter by letter exegesis, including symbolic interpretations of the letter shapes, which are outside our ken, but the opening paragraphs, fortunately near where the extant Greek begins,

---

[13] Bandt, *Vom Mysterium*, 51. The ref. is to *BJ* 2:1–25.

[14] *Ibid.*, 62ff.

[15] Qur'ān 6:76–79.

[16] See above p.7. *Tanḥuma Yelammedenu*, (ed. Urbach, 1966), quoted in Bandt, *Vom Mysterium*, 73.

contain the cosmological gist of the book. The author starts by describing how it was upon reading two New Testament passages that he was brought to understand that there was a great mystery hidden in the alphabet: 'I am the alpha and the omega,' (Rev. 1:8 and 22:13)[17] and 'Not an iota, not a dot, will pass from the Law until all is accomplished' (Matt. 5:18).

In response to his prayers for his understanding to be opened to this mystery, he was granted a vision in which he stood on Mount Sinai and saw the lordly power (δεσποτικὸν κράτος), from which he heard and learnt about the letters. This same power, or an undetermined 'untaught teacher' (ἀδίδακτος διδάσκαλος), starts by explaining the relation between στοιχεῖα and γράμματα:

στοιχεῖα λέγονται ταῦτα τὰ γράμματα, οὐχ ὅτι **στοῖχόν τινα καὶ τάξιν** ἀποτελοῦσιν, ὡς οἱ μάταιοι τῶν Ἑλλήνων σοφοὶ ἐνόμισαν, ἀλλ᾽ ὅτι τῶν στοιχεῖων τῶν κτισμάτων τοῦ κόσμου τοὺς τύπους καὶ τὰ σχήματα ἐν ἑαυτοῖς ἔχουσι καὶ ὑπογράφουσι.

These letters are called 'elements' not because they evince some *elemental sequence and order*, as the silly scholars among the Greek thought, but because they contain in themselves and they trace (ὑπογράφουσι) the imprints (τύπους) and configurations (σχήματα) of the elements that build this universe.[18]

A few lines later, after giving some examples, he explains that such a mystery was carved precisely in the Greek letters so that the former idolaters would acknowledge and submit to god-worship. Since 'every human hand which by writing imprints these letters (γράφουσα τοὺς τύπους τῶν γραμμάτων), thereby retraced/ratified (ὑπέγραψε) and confirmed, either willingly or unwillingly, that the universe was not uncreated as it seemed to the atheist among the Greek sages, but that there is the Divinity, and that it made (ἐποίησε) in the beginning heaven and earth…' Then, after giving a Genesis summary, and after reminding us that Christ himself is the alpha and omega, he explains a little further the process of creation:

Αὕτη ἡ νομιζομένη εὐτελὴς ἀλφάβητος τὸ μυστήριον περιέχει· διδάσκουσα ἡμᾶς ἐν τοῖς σχήμασι **καὶ ἀριθμοῖς** τῶν στοιχεῖων αὐτῆς τήν τε τοῦ θεοῦ λόγου ἐξ οὐρανοῦ κατάβασιν.

This alphabet in its apparent simplicity contains the mystery: it teaches us, through the configurations *and the numbers* of its elements, the descent of the word (λόγος) of God from heaven.

---

[17] Cf. above p. 110 and below p. 146.

[18] Bandt, *Vom Mysterium*, 106, emphasis mine.

Then the author goes on to give a list of all the other points of Christian doctrine taught by the individual letters, a detailed elaboration which actually fills the rest of the book.

I have highlighted the association to the numbers, which must rank among the first such texts in Greek literature, where attention to the alphanumeric duality of the στοιχεῖα is drawn in this explicit way. The 'elements', according to it, have an intrinsic 'number' which is taught by the alphabet.

Later and throughout the treatise, it becomes hard to discern how the author chooses when to use γράμματα or στοιχεῖα. Mostly γράμματα is used in the many instances in which the shape of the written letter is being discussed, but cf. §25, when the author asks about God:

Ποῖον τῶν κτισμάτων ἢ τῶν στοιχεῖων ἢ τῶν γραμμάτων ἐστὶ κύριος;

Over which of the creatures or elements or letters does he rule?

In §20 it is said of the letters: θεοτύποτα τυγχάνουσι καὶ οὐδεὶς ἀνθρώπων ἢ φιλοσόφων ταῦτα διετύποσεν, 'they are stamped/modelled by God, and there is no man or sage who has stamped them.' We could almost translate, 'they are typed by God,' and in doing so, we are reminded of similar images in Philo's writings, all about divine printing or divine typography.

2. 22 or 24 Letters

Another remarkable novelty we find in *ML* is the frequent occurrence of the feminine noun ἀλφαβήτος, used again and again as a sort of independent entity. In this regard, a puzzling feature of this work is how the author chooses to dismiss rather offhand the letters χ and ψ, and thus to deal with a 22-letter alphabet, just like the Hebrew. Indeed, one of the points of contact with the Jewish mystical tradition is the assignment of correspondences between the 22 letters and the 22 works of God, as recounted in the *Book of Jubilees* mentioned above.

In the end, the doctrine becomes rather puzzling between the rejection and the adoption of Hebrew and Greek letters and their respective interpretations and overlapping correspondences. This unclear borderline between the two traditions, as well as its doctrinal implications, has been

fully appreciated by Stroumsa,[19] who confirms several of the developments I shall be discussing in later pages.

II. Apocryphal Gospels

This Hebrew-Greek alphabetic melange is found again in some of the apocryphal gospels, in which the 'alphabetic' nature and wisdom of Christ is brought out in a remarkable way. In the *Infancy Gospel of Thomas*, a child Jesus challenges several school masters about the meaning and power of the letters of the alphabet, 'If you are indeed a teacher, and if you know the letters well, tell me the power of *alpha* and I will tell you that of *beta*,'[20] and also, 'Hypocrite! How dare you teach the *beta*, when you have not even known the *alpha* in its original nature (κατὰ φύσιν)?'[21]

Immediately after, Jesus adds some more detail,

'Listen, teacher, and observe the disposition (τάξις) of the first letter (στοιχεῖον), how it has two guiding strokes and a middle stroke crossing both lines which you see, how they converge with the top projecting and turning back as dancers (χορεύοντας)…'[22]

The puzzling description of the letter seems to refer to a cursive technique of joining the three constituent movements of the capital *Alpha*.[23] The mention of the 'dancing' strokes, which has particularly baffled interpreters, does not look so strange if we recall the associations with dance found in the first chapter.[24] We must likewise observe here, as the meaningful recurrence of a trait, the notion of the alphabet in its pedagogical dimension, and the letters as a preserve of childhood. This association, which is so obvious within the practical context of schooling,

---

[19] Stroumsa, '*The Mystery*', 42–3.

[20] A. de Santos Otero, *Los evangelios apócrifos*, 9th ed. (Madrid: Biblioteca de Autores Cristianos, 1996), 292. There is a reference to this in Irenaeus, *Adv. haer.* 1, 20, 1; cf. C. A. Frilingos, 'Parents Just Don't Understand: Ambiguity in Stories about the Childhood of Jesus', *Harvard Theological Review* 109 (2016): 39.

[21] Santos Otero, *Los evangelios apócrifos*, 284, §§6 and 14.

[22] Cf. B. Ehrman and Z. Plese, eds., *The Apocryphal Gospels: Texts and Translations* (Oxford University Press, 2011), 41ff. and especially *The Infancy Gospels of James and Thomas*, vol. 2, ed. by R.F. Hock (Santa Barbara, CA: Polebridge Press, 1995), 117–18, for all the textual problems of this passage.

[23] Ehrman and Plese, *The Apocryphal Gospels*, 1094.

[24] See above, p. 10.

acquires here, in the narrative of the childhood of the Logos incarnate, a remarkable symbolic dimension.[25]

Similar exchanges are found in the *Arabic Infancy Gospel*,[26] where *aleph* and *bet* (not Arabic, but Hebrew letter names in spite of the context) substitute the Greek letters, and in a number of other sources which attest to a complex and early transmission.[27]

It is interesting that there is no mention of any such text in the *Mysteria litterarum*; perhaps this could be considered a safe indicator that its text predates the infancy gospels, but the dating of these works is very uncertain, possibly as early as the second century, with variants in different languages found in the ninth century and even later.

III. A Spiritual ABC in Monastic Literature

Another later text related indirectly to these gospels is a peculiar alphabetic acrostic found in the *Questions and Answers* of the hermit Barsanuphius of Gaza (c. sixth century). It is a list of virtues and vices that was used for meditative introspection, as part of the teachings of religious communities in the education of their disciples.[28] The sacrality inherent to the στοιχεῖα was an integral part of this method, and it was taken for granted with all its connotations. Because στοιχεῖα meant letters and sounds as well as cosmic elements, their combination was understood to create a meaningful universe.[29] By relating every letter-element to God, Barsanuphius was sacralizing his teaching. The use of the alphabet was in itself a sacramental

---

[25] See above, p. 18.

[26] Also called *Syriac Infancy Gospel*, §§48 and 49. See also the Arabic text in H. Sike, ed., *Evangelium infantiae, vel Liber apocryphus de infantia Servatoris* (apud Franciscum Halmam, 1697), 144ff.

[27] See B. McNeil, 'Jesus and the Alphabet', *The Journal of Theological Studies*, 1976: 126–128, and also R. Aasgaard, *The Childhood of Jesus: Decoding the Apocryphal Infancy Gospel of Thomas* (Cambridge: James Clarke & Co Ltd, 2009), Greek text 219ff., and a valuable introduction.

[28] B. Bitton-Ashkelony, 'Counseling Through Enigmas', chap. 5 in *The Monastic School of Gaza*, by B. Bitton-Ashkelony and A. Kofsky, Supplements to Vigiliae Christianae 78 (Brill, 2006), 119. About the direct Egyptian origin of this usage, see A. Veilleux, 'Monachisme et gnose. Première partie : le cénobitisme pachômien et la bibliothèque copte de Nag Hammadi', *Laval théologique et philosophique* 40, no. 3 (1984): 289.

[29] Bitton-Ashkelony, 'Counseling', 119–20.

practice, punctuating the ascetic progress, or an itinerary through the stations of the spiritual life.

In order to explain more satisfactorily the intension of the concept of such letters,[30] Bitton-Ashkelony makes use of a Hebrew binomial prominently attested in later times, the expression *otiyot yesod*. Meaning literally 'letters of foundation', this is how the twenty-two letters are once and again called in the *Sefer Yetsirah*; given the semantic correspondence, what we have in her expression is quite possibly *an original and native Hebrew translation of our* stoicheia.

IV. Measure, Number, Weight, and Augustine

One of the most significant and influential Biblical passages in relation to the numerical aspects of creation is Wisdom 11:20, at the end of the verse,[31]

> πάντα μέτρῳ καὶ ἀριθμῷ καὶ σταθμῷ διέταξας
> 'you have arranged all things by measure and number and weight.'

I consider significant that the book is attributed to Solomon, and there is an obvious relation to the Pythagorean reflections of Chapter 2 above, especially observing that the verb used for the creation (διέταξας, *disposuisti*, you arranged) is a cognate of τάξις, order, directly associated to the *stoicheia*. But I shall focus on the most authoritative early commentary on the text, that of Augustine (354–430), which left its imprint through the centuries, even flourishing in later works by Eriugena and Grosseteste.[32]

---

[30] I use the term 'intension' both in its Scholastic and logical sense, referring to the intensity of semantic compression and to the sum of the attributes contained in the word (*OED Online*, Oxford University Press, September 2019, *s.v.*).

[31] This is the verse number in Rahlfs and other editions and translations, but most sources cite it as 11:21. It was 'quoted by almost every Christian author between Augustine and Pascal writing about the importance of mathematics,' see J. Høyrup, *In Measure, Number, and Weight: Studies in Mathematics and Culture* (Albany: State University of New York Press, 1994), xv.

[32] T. O'Loughlin, 'The Mysticism of Number in the Medieval Period Before Ériugena', in *The Perennial Tradition of Neoplatonism*, ed. J. J. Cleary (Leuven University Press, 1997), 412.

The subtleties of the triad 'measure–number–weight' are discussed in *De Genesi ad litteram*,[33] which is, as per its title, a conscientious 'letter by letter' exegesis of Genesis, showing how intricate and refined is the connection between numbers and cosmogony.

Omnia in mensura, et numero, et pondere disposuisti.

Numbers are related to cosmogony indeed in several ways according to this passage, since for our understanding, measure and number and weight are all interrelated aspects of quantity, hence of number.[34] It is very clear, though, that in this passage we are not in the realm of numerology, dealing with the theurgic or magical properties of numbers, but rather in the 'properly philosophical' understanding 'that the created universe can be considered a numbered reality and is understood through number.'[35] Augustine elaborates on Solomon's words, explaining that the three dimensions of measure, number, and weight are in God:

mensura omni rei modum praefigit, et numerus omni rei speciem praebet, et pondus omnem rem ad quietem ac stabilitatem trahit, ille primitus et veraciter et singulariter ista est, qui terminat omnia et format omnia, et ordinat omnia.

Measure sets the dimension (*modus*) of every thing, number gives features (*species*) to every thing, and weight (*pondus*) draws every thing to repose and stability; and He is primordially, truly, and uniquely these three Who delimits all things, forms all things and orders all things.

He goes on to explain how is it that the three 'modalities'[36] are God Himself in a particular way, but I shall leave aside the theological complexities, and focus instead on how Augustine understands these three modalities. Here is a schematization of the relations found in the text:

---

[33] 4.3.7–4.5.12; this passage itself has given rise to many commentaries and has had a tremendous doctrinal influence; see W. Beierwaltes, 'Augustins Interpretation von Sapientia 11,21', *Revue d'Etudes Augustiniennes et Patristiques* 15, nos. 1-2 (1969): 52.

[34] Cf. the legendary episode mentioned above, when Pythagoras discerns acoustic properties thanks to the weight of the metalwork.

[35] O'Loughlin, 'The Mysticism of Number in the Medieval Period Before Ériugena', 399–400

[36] S. Oliver, 'Augustine on Creation, Providence and Motion', *International Journal of Systematic Theology* 18, no. 4 (2016): 394, calls them 'physical and metaphysical categories that delineate the bounds within which creation unfolds.'

mensura – modus – terminus
numerus – species – forma
pondus – stabilitas – ordo

It is remarkable to what extent the attributes of this triad echo those of the στοιχεῖα, attributes that go as far back as the earliest gnomonic sense of the word. The instrumental, or even better, 'officiating' role of the alphanumeric elements in the creation of the universe is confirmed here as we find this compressed description of their attributes: they are the instruments of the creating Demiurge just as they are the utensils of the priestly Creator – every craft is a kind of ritual action. They determine, form, and order insofar as they measure, count, and weigh. In later pages we shall have the opportunity to see how this is confirmed in other contexts, where there is question of identical functions in sources of comparable cosmogonic and cosmological import related to architecture and grammar.[37]

Looking back on the Greek tradition, a fragment from Sophocles presents a very early parallel in relation to the figure of Palamedes, one of the mythical co-creators of the alphabet (together with the three Fates, Hermes, Simonides, and Epicharmus),[38]

σταθμῶν, ἀριθμῶν καὶ μέτρων εὑρήματα
τάξεις τε ταύτας οὐράνιά τε σήματα.
κἀκεῖν' ἔτευξε πρῶτος, ἐξ ἑνὸς δέκα
κἀκ τῶν δέκ' αὖθις...

The inventions of weights, numbers, and measures, and these arrays (τάξεις), and the heavenly signs. And he was the first to devise how to count from one to ten and further from ten…[39]

Once again, in this textual parallel to the Wisdom verse, we find the joint mention of attributes proper to the στοιχεῖα: the three modalities above, the 'arrays' and even the numbers of the decade and the basis of arithmetic. An expansion on the function of Palamedes is found in Aeschylus' *Prometheus Bound* (456-60),

---

[37] See pp. 138, 197 and 226.

[38] Hyginus, *Fabulae* 277.

[39] Fr. 423, ed. Radt. Cf. also Euripides fr. 578.

...σφιν ἀντολὰς ἐγὼ
ἄστρων ἔδειξα τάς τε δυσκρίτους δύσεις.
καὶ μὴν ἀριθμόν, ἔξοχον σοφισμάτων,
ἐξηῦρον αὐτοῖς, γραμμάτων τε συνθέσεις...

I showed them the risings and the unclear settings of the stars. And I invented for them number, outstanding among artifices, and the combinations of letters…

The complex involvement of Palamedes with the themes under study would warrant more than these few lines, but what I would like to retain from them, apart from the illuminating reformulation of the same triad and its explicit alphabetic associations, is the fact that the Wisdom verse, the ancient playwrights, and Augustine share some common insight into the facets of number.

Back to Augustine, his writings on cosmogony return often to this triad, even including the reference to astronomy:

Intuere coelum et terram et mare et quaecunque in eis vel desuper fulgent […] formas habent, quia numeros habent. Adime illis haec, nihil erunt. A quo ergo sunt, nisi a quo numerus?

Look at the sky and the earth and the sea, and whatever shines brightly above […] They have forms because they have numbers. Take these away, and nothing will be left. What is their source, but the source of number?[40]

More detail into the cosmogonic process, including a key mention of the elements is given in *De Trinitate*,

Ista quippe originaliter ac primordialiter in quadam textura elementorum cuncta iam creata sunt sed acceptis opportunitatibus prodeunt […] erumpant quodam modo et foris creentur explicando mensuras et numeros et pondera sua quae in occulto acceperunt.

All these things have already been created at once, originally and primordially, in a sort of web (*textura*) of the elements […] but they come forth when the opportunity arises […] so that those [things] may burst forth somehow and be created outwardly, by the unfolding of the measures, number, and weight they had received in concealment.[41]

According to this beautiful passage, the progression from a first creation *in*

---

[40] Cf. *De Libero arbitrio*, 2.16.42.

[41] 3.9.16.

divinis, in a principial concealed matrix of a textile/textual nature,[42] takes place like an explication, in the literal sense of unfolding: God unfolds his creation, as if 'explaining' Himself eruptively, revealing at once the previously compressed harmony. This compressed uncreated harmony is due to the interplay within a triad of modalities or categories, each of them a kind of 'number', but… not quite. It is rather elusive and suggestive, and it is certainly not the first triad of this kind we will find in the course of this work.

[42] This image corresponds to the Greek συμπλοκὴ τῶν στοιχείων, an 'interweaving' or 'tight embrace of the elements' with many Platonic echoes, and related to a 'substantial presupposition of the existence of *logos*'; see M. Mouzala, 'Logos as ʽsumplokē or koinonia tōn peri tēn ousian dēlomatōnʼ in Plato's Sophist', *Platonic Investigations* 10, no. 1 (2019): 35–75.

Chapter 5

Hermetica, Magic and Gnostic Sources

From around the same time that the four canonical Gospels and the Pauline epistles were being recognised as authoritative in the second century AD,[1] we have the first evidence of the Greek writings attributed to Hermes Trismegistus,[2] a hybrid Egyptian-Greek mythical figure which represents the very rich and complex intellectual and religious landscape of late Hellenistic Alexandria, including the coexistence and multi-layered relations between Egyptian, Greek and Roman religions, Judaism and a burgeoning Christianity, so much so that the *Hermetica*, as this literature came to be called, has been viewed as a direct response to this very complex milieu, or more specifically as a result of the cross-cultural exchange and dialogue between Greek and Egyptian symbolic universes,[3] a cultural and intellectual exchange much older than what took place during the Hellenistic period, and thus ultimately inextricable in historical terms.[4] Hermetism has also been considered an example of the attempt to retain both philosophy and religion, and in this it has been compared to the writings of Neoplatonists and Neopythagoreans.[5]

---

[1] See G. H. van Kooten, 'Christianity in the Graeco-Roman World: Socio-political, philosophical, and religious interactions up to the Edict of Milan', in *The Routledge Companion to Early Christian Thought*, ed. D. J. Bingham (Routledge, 2009), 6.

[2] Hermetic collections of some kind circulated as early as the second or third centuries. See B. P. Copenhaver, *Hermetica: the Greek Corpus Hermeticum and the Latin Asclepius* (Cambridge: Cambridge University Press, 1992), xlii.

[3] J. Dieleman, *Priests, Tongues, and Rites: The London-Leiden Magical Manuscripts and Translation in Egyptian Ritual (100-300 CE)*, Religions in the Graeco-Roman World 153 (Leiden, Boston: Brill, 2005), 2, and more recently R. Gurgel Pereira, 'The Hermetic Λόγος: Reading the *Corpus Hermeticum* as a Reflection of Graeco-Egyptian Mentality' (PhD diss., Philosophisch-Historischen Fakultät der Universität Basel, 2010), 14.

[4] *Ibid.*, 80.

[5] A. E. Affifi, 'The Influence of Hermetic Literature on Moslem Thought', *Bulletin of the School of Oriental and African Studies* 13, no. 4 (1951): 841.

Originally a collection of philosophical and soteriological contents, the Hermetic literature[6] grew over the centuries to include an enormous and uneven body of works which includes many astrological, magic and alchemical works of all origins, including eventually Latin and Arabic works.[7] Two major strands are usually distinguished in this literature: one more 'practical', 'magical' or 'theurgical', and one more 'theoretical', 'philosophical' or 'theological', but the boundaries are difficult to decide, and the evidence seems to indicate that the two kinds of writings were related aspects of a single practical spiritual way,[8] and that the dichotomy between technical and philosophical *Hermetica* is a modern classification.[9]

In the following pages, I will be taking into account the larger selection of *Hermetica* found in the Colpe-Holzhausen edition,[10] which includes the Stobaeus fragments and some Coptic and other material, but I shall draw mainly from some passages of the *Corpus Hermeticum*[11] and the *Asclepius*[12] where there is question of the elements and of the power of phonemes.

---

[6] I shall use here a wide meaning of 'Hermetism', including not only the philosophical Hermetica and its commentaries, but allowing also for later non-Greek sources, alchemical, magical and others, and I shall reserve for early modern material the useful terminological distinction found in W. J. Hanegraaff, *Dictionary of Gnosis & Western Esotericism* (Leiden: Brill, 2006), ix-x (hereafter cited as DGWE). Cf. also in this regard the important caveat in van Bladel, *The Arabic Hermes*, 17-22.

[7] A useful outline of what is included can be found in F. Ebeling, *The Secret History of Hermes Trismegistus: Hermeticism from Ancient to Modern Times* (Ithaca, NY: Cornell University Press, 2007), 10-11. Cf. Copenhaver, *Hermetica*, xxxii and the preface *in extenso*.

[8] G. Fowden, *The Egyptian Hermes: a Historical Approach to the Late Pagan Mind* (Princeton University Press, 1993), 95ff. and comments in Copenhaver, *Hermetica*, xxxvi.

[9] Gurgel Pereira, 'The Hermetic Λόγος', 96.

[10] *Das Corpus Hermeticum Deutsch*, 2 vols., Clavis Pansophiae, 7, 1-2 (Stuttgart: Frommann-Holzboog, 1997).

[11] Hereafter *CH*, a group of eighteen Greek treatises historically considered as a distinct body of writing, Copenhaver, *Hermetica*, xxxii.

[12] This dialogue, preserved entirely only in Latin translation, was for centuries the only available representative, the 'tip of iceberg', of Hermetic literature in Europe; see I. Parri, 'Tra ermetismo antico ed ermetismo medievale: l'*Asclepius*', in *Adorare caelestia, gubernare terrena. Atti del Colloquio Internazionale in onore di Paolo Lucentini*, ed. P. Arfé, I. Caiazzo and A. Sannino (Turnhout, 2011), 53.

First, however, I shall take the opportunity afforded by the *Hermetica* to look into the character of their eponymous deity, starting from the Greek myth which is related to this research very deeply and in many ways.

I. Who is Hermes?

Whereas the names of most Greek gods have fallen into disuse and are relegated to mythological specialised literature, the name of Hermes has shown an extraordinary persistence through the centuries, partly due to the development of the *Hermetica*, but also from the very original nature of the god.[13] Indeed, this enduring power of Hermes is as clear testimony as could be to the attributes of the god, and even to his metallic symbol, quicksilver, whose 'mobility makes it especially suitable for transformations,' such as in its unique capacity to form amalgams with most other metals.[14] The image of Hermes amalgamated into other traditions to the point that over the centuries he became identified, among others, to the prophets Moses and Elijah or to Enoch,[15] to the Egyptian god Thoth,[16] to St Paul of Tarsus,[17] and to the Islamic prophet Idris.[18]

In the pre-modern Arabic world in particular, attributing a work to 'Hermes' was to ascribe it to an extremely ancient wisdom transmitted from many centuries ago, long before the revelation of Islam, but at some point in history, in early classical Baghdad, the 'thrice-great' Hermes

---

[13] Cf. the current use of 'hermeneutics'; see W. Burkert, *Greek Religion*, trans. J. Raffan (Oxford: Blackwell/Harvard University Press, 1985), 158.

[14] P. Enghag, *Encyclopedia of the Elements: technical data, history, processing, applications* (John Wiley & Sons, 2008), 797, includes a reference to Vitruvius, 7,8, the first recorded mention of amalgamation.

[15] Patai, *The Jewish Alchemists*, 33-4; K. Lindbeck, *Elijah and the Rabbis: Story and Theology* (New York: Columbia University Press, 2010), 74ff.

[16] This is the *interpretatio graeca*, Herodotus, 2, 67; see Fowden, *The Egyptian Hermes*, 22ff.

[17] Acts 14: 12, and comment in Cramer, *Catenae*, 235, 'he was taken for Hermes by the unbelievers, because of his command of speech (λόγος).'

[18] O. El Daly, *Egyptology: the Missing Millennium. Ancient Egypt in Medieval Arabic Writings* (London: UCL Press, 2005), 84-5, 113-4, the earliest Arabic source is al-Masʿūdī. See also Y. Erder, 'The Origin of the Name Idrīs in the Qur'ān: A Study of the Influence of Qumran Literature on Early Islam', *Journal of Near Eastern Studies* 49, no. 4 (1990): 341.

became 'the triplicate Hermes' (*Hirmis al-muthallath*).[19] Subsequent references to 'Hermes' sometimes deal accordingly with one of three different individuals: 'the first all-wise Hermes lived in Egypt before the flood, and is identical with Enoch; the second Hermes lived in Babylon and revived the sciences after the flood; the third Hermes is, once again, in Egypt. He taught alchemy and passed on his wisdom to Asclepius. This third Hermes corresponds to the Hermes of the *Corpus Hermeticum*.'[20] However, true to the character of the god who moves at ease across boundaries, this triple distinction was far from consistent through the middle ages.

Going back to the origin, there is evidence of the name of Hermes in Greek from Mycenaean inscriptions, and the origin of the name refers clearly to a specific object, the ἕρμα, a cairn or heap of stones used to demarcate boundaries.[21] Hermes is primarily a god of boundaries and intersections, and only later the consecrated messenger (ἄγγελος/'angel') of the gods. He was born at dawn, further emphasising his liminal nature, and as patron of trade, he mingles with mortals and immortals alike.[22] From very early times, his most common representations were ithyphallic figures, initially placed on top of cairns, and later incorporated into single stone pillars, many of which are preserved, and which occasionally evolved into square pillars devoid of any obvious sexual association.[23] These pillars, regardless of their geometric abstraction, were still called Hermes (whence the English 'herm'), and they retained the connotations combining demarcation, communication and generative power. It is not hard to see how in all these aspects the association with language is natural, but instead of dwelling on this symbolism, I would like to examine in detail a passage in *Philebus* which seems to sum up very neatly, through the intervention of Theuth (Thoth, as the Egyptian Hermes), the complex and wide-ranging significance of Hermes for this research.

---

[19] van Bladel, *The Arabic Hermes*, 121-63.

[20] C. Burnett, 'The Legend of the Three Hermes and Abū Maʿshar's *Kitāb al-Ulūf* in the Latin Middle Ages', *Journal of the Warburg and Courtauld Institutes* 39 (1976): 231.

[21] Burkert, *Greek Religion*, 156-7.

[22] *Homeric Hymn to Hermes*, 17, 572ff.

[23] Burkert, *Greek Religion*, 156.

II. Thoth and the Letters in Philebus

The context of this passage is important. It is introduced as one among other examples (like music) of a 'doctrine of principles' which is both epistemological and ontological – a 'tale of the people of old who were superior to us and living in closer proximity to the gods, that whatever is ever said to exist consists of one and many' (16d1) – explaining how knowledge and cosmic order are enacted 'by the action of the One structuring the indeterminate plurality of the Dyad.'[24]

ἐπειδὴ φωνὴν ἄπειρον κατενόησεν εἴτε τις θεὸς εἴτε καὶ θεῖος ἄνθρωπος – ὡς λόγος ἐν Αἰγύπτῳ Θεῦθ τινα τοῦτον γενέσθαι λέγων – ὃς πρῶτος τὰ φωνήεντα ἐν τῷ ἀπείρῳ κατενόησεν οὐχ ἓν ὄντα ἀλλὰ πλείω, καὶ πάλιν ἕτερα φωνῆς μὲν οὔ, φθόγγου δὲ μετέχοντά τινος, **ἀριθμὸν δέ τινα** καὶ τούτων εἶναι, τρίτον δὲ εἶδος γραμμάτων **διεστήσατο** τὰ νῦν λεγόμενα ἄφωνα ἡμῖν· τὸ μετὰ τοῦτο διῄρει τά τε ἄφθογγα καὶ ἄφωνα μέχρι ἑνὸς ἑκάστου, καὶ τὰ φωνήεντα καὶ τὰ μέσα κατὰ τὸν αὐτὸν τρόπον, ἕως ἀριθμὸν αὐτῶν λαβὼν ἑνί τε ἑκάστῳ καὶ σύμπασι στοιχεῖον ἐπωνόμασε· καθορῶν δὲ ὡς οὐδεὶς ἡμῶν οὐδ' ἂν ἓν αὐτὸ καθ' αὑτὸ ἄνευ πάντων αὐτῶν μάθοι, **τοῦτον τὸν δεσμὸν αὖ λογισάμενος ὡς ὄντα ἕνα** καὶ πάντα ταῦτα ἕν πως ποιοῦντα μίαν ἐπ' αὐτοῖς ὡς οὖσαν γραμματικὴν τέχνην ἐπεφθέγξατο προσειπών.

When someone, whether some god or even divine human – tradition in Egypt reports that this someone was Theuth – observed that vocal sound (φωνή) is unlimited (ἄπειρον), he first observed that the vowel sounds (φωνήεντα) in the unlimited were not one but many, and again that others partake not of voice (φωνή), but of some sound (φθόγγος), and that there are *a certain number* of those; and he *set apart* a third form of letters, which we now call stops (ἄφωνα). After that, he distinguished the voiceless stops (τά ἄφθογγα καὶ ἄφωνα), up to each one, and the vowel sounds and the intermediates (τὰ μέσα) in the same way. When he had grasped their number, he applied the name 'letter' (στοιχεῖον) to each one and all together. And observing that none of us would ever learn (μανθάνω) one apart by itself (ἓν αὐτὸ καθ' αὑτὸ) without all of them, and *having reckoned in turn that this bond was one* (ἕνα) and made all these [letters] somehow one (ἓν), he pronounced it the 'art of letters' (γραμματικὴ τέχνη), as being one [art] set over them.[25]

---

[24] C. H. Kahn, 'Dialectic, Cosmology, and Ontology in the Philebus', in *Plato's Philebus: Selected Papers from the Eighth Symposium Platonicum*, ed. J. Dillon and L. Brisson (Sankt Augustin: Academia Verlag, 2010), 59ff. gives a careful and insightful reading.

[25] 18b6–d2, trans. Gill, 'The Divine Method', 44, slightly modified. Highlighting mine.

MINIMAL SKETCH OF ANCIENT GREEK PHONOLOGY

The twenty-four letters were classified in Greek grammar as seven vowels (φωνήεντα) α ε η ι ο υ ω and seventeen consonants (σύμφωνα) β γ δ ζ θ κ λ μ ν ξ π ρ σ τ φ χ ψ. These were in turn classified as eight semivowels (ἡμίφωνα) ζ ξ ψ λ μ ν ρ σ and nine voiceless (ἄφωνα) β γ δ κ π τ θ φ χ, of which three are smooth (ψιλά) κ π τ, three rough (δασέα) θ φ χ, and three medial (μέσα) β γ δ.[26]

It is not quite clear how closely Plato meant to remain to the linguistic classification sketched above, and it is not of much consequence to my present argument, though other contexts will afford the opportunity to mention it later. I also shall not go into the obvious and significant bearings that this extended passage has on the theory of the ideas and their liminal status, but I will draw attention to the fact that the officiating deity is Theuth, identified traditionally with Hermes, and by Ficino more specifically with Hermes Trismegistus.[27] The invention of the alphabet, or more specifically the phonetic repertoire of the Greek language,[28] as a selection or recognition of elements from a continuum is naturally ascribed to the god of language and communication. It is important to note too the emphasis on the *delimitation* – setting boundaries – as the method to establish the elements of language that will make possible learning (μανθάνειν), making of the elements in effect μαθήματα, 'mathematicals', and making all knowledge derived from the alphabet 'mathematical' in a way.

'A certain number' has to be recognised in the continuum, which then becomes an *arithmeticised* set of *infimae species* or *intelligibilia prima*. Phoneme and number thus stand together, inextricably joined at the root

---

[26] Dionysius Thrax, *Dion. Thrax*, 10–13; D. Thrax, *The Grammar of Dionysios Thrax*, trans. T. Davidson, reprinted from the *Journal of Speculative Philosophy* (St. Louis: George Knapp, 1874), 5–6; for the corresponding passage in the *Poetics*, with a useful commentary, Aristotle, *On the Art of Poetry*, ed. I. Bywater (Oxford University Press, 1909), 56, 262 (1456b20ff.)

[27] M. Ficino, *The Philebus Commentary*, ed. M. Allen, Information and Interdisciplinary Subjects (Arizona Center for Medieval / Renaissance Studies, 2000), 273.

[28] Cf. the valuable reference to the International Phonetic Alphabet in Gill, 'The Divine Method', 45.

of language, and the same is applicable to music – it will be remembered that the invention of the lyre is also attributed to Hermes.[29]

Two lexical items of note are the use of διεστήσατο, 'set apart' – a 'demiurgic' verb often used in the cosmogony of *Timaeus* – in establishing part of the alphabet, and the recognition of the unitary bond (δεσμός) which corresponds to our unitary concept of an alphabet or a complete system.

Among the epithets of Thoth in Egyptian literature are found 'Lord of the words', 'The one with great Spell craft', 'Lord of the sacred words' and he who 'created the world by thought and utterance.' I shall now move on to examine a few passages of the *Corpus Hermeticum* where these and the above facets of Hermes can be discerned again.

III. The Creation Elements in the Hermetica

There are approximately forty occurrences of the word στοιχεῖον/*elementum* in the *CH* and the other *Hermetica* considered. Most of these refer to the four elements of the material world, to their origin and cosmological status.

The first example is found in *Poimandres* (*CH* I), 8,[30] where the origin of the elements is discussed.

Τὰ στοιχεῖα τῆς φύσεως πόθεν ὑπέστη; [...] – Ἐκ βουλῆς θεοῦ ἡ φύσις λαβοῦσα τὸν λόγον καὶ ἰδοῦσα τὸν καλὸν κόσμον ἐμιμήσατο, κοσμοποιηθεῖσα διὰ τῶν ἑαυτῆς στοιχείων καὶ γεννημάτων ψυχῶν.

'The elements of nature – whence have they arisen?' […] And he answered: 'Nature, by the will of god having received the *logos*, having observed the beautiful cosmos and imitated it, thus being made itself a cosmos through its own elements and its progeny of souls.'[31]

---

[29] *Homeric Hymn to Hermes*, 46ff. Cf. A. Vergados, *The Homeric Hymn to Hermes: introduction, text and commentary*, Texte und Kommentare 41 (Berlin/Boston: Walter de Gruyter, 2013), 88-90, 134ff. for astronomical associations to the seven strings and relevant literature; and see above p. 30.

[30] I cite following the Nock-Festugière text when possible, otherwise Colpe-Holzhausen.

[31] I follow Holzhausen's reading; see his translation, *Corpus Hermeticum Deutsch*, 13, and more specifically J. Holzhausen, 'Natur und Gottes Wille im Hermetischen Traktat 'Poimandres'', *Hermes* 120, no. 4 (1992): 485, where Büchli's reference to *Timaeus* 48 is noted, quite in line with my observations above.

The correction introduced by Holzhausen (ἡ φύσις λαβοῦσα instead of ἥτις λαβοῦσα) solves satisfactorily longstanding textual problems, and it brings to light neatly the relation between the supernal *logos* and the στοιχεῖα, once again allowing for an alphanumeric interpretation. Here is an alternative and strictly valid translation: 'The letters of nature – whence have they arisen?' […] 'Nature, by the will of god, received the *Word*, observed the beautiful cosmos and imitated it, thus becoming itself a cosmos through its own letters and its progeny of souls.'

If the metaphysical model for creation is a word or speech or language, it is only to be expected that its component parts are letters or sounds. In an analogous way, we could also translate λόγος as 'reckoning' or 'calculation' – exactly as in the calculations made by a craftsman during the creative process – and the στοιχεῖα would be the 'numerals' or simply the 'numbers' of the cosmos. The similarity with the intermediary role of the λόγος in Philo is quite clear.[32]

It is important to note that the above text seems to imply the notion of a set of 'beautiful' or heavenly elements which would have as counterpart the material elements. In fact, this implication is unfolded and made explicit in other passages where there is question of τὰ ἀνωφερῆ and τὰ κατωφερῆ στοιχεῖα, the 'ascending' and the 'descending' elements, or simply the 'upper' and 'lower' elements. In most contexts,[33] including some passages of the *CH*,[34] these terms refer to the pairs of fire-air and water-earth respectively, meaning more precisely 'ascending' and 'descending', but in this passage (I, 10), as in some other similar contexts, there is a clear distinction between two sets of elements, superior and inferior. A few lines after the above quotation, the material elements are in fact described as τὰ ἄλογα τὰ κατωφερῆ – they are *logos*-less and inferior elements. Another mention of the inferior elements is found further down in I, 11, and also in *Asclepius* where the contrast between the *elementa inferiora* and *superiora* is found in sections 9 and 10.

This doctrine is later found explicitly in Aquinas,[35] *in universo elementa superiora dicuntur esse ut forma inferiorum*, 'the higher elements are said

---

[32] Cf. Holzhausen, 'Natur und Gottes Wille', 486.

[33] *E.g.* Cornutus (ca. 60 AD), *De natura deorum*, 48, 14.

[34] *E.g.* XIII, 6, and fragment 26.

[35] *Qu. disp. de veritate*, 1 qu.13, art. 5.

to be in the universe like a pattern for the lower ones,' and it is exactly what is adumbrated by a contemporary philosopher who, elaborating on a passage of *Theaetetus*, says, 'We must first discover the noetic elements, the universal letters ABC, and the universal system of the alphabet.'[36]

IV. Magic Phonemes

In treatise XVI of the *CH* we find for the first time in our survey another facet of the *stoicheia* in what came to be known as *voces magicae*, *voces mysticae* ('magic' or 'mystical utterances') or *nomina barbara* ('foreign names'). While addressing his interlocutor, Hermes explains how the translation of this treatise into Greek would render it inefficacious, since 'the very quality of the speech and the (sound) of Egyptian words have in themselves the energy of the objects they speak of,' whereas 'the Greeks have empty speeches … that are energetic only in what they demonstrate.' 'We, by contrast, use not speeches (λόγοι), but sounds (φωναί) that are full of action (ἔργα).'[37]

The Egyptian language is here presented as a 'primordial language' whose sounds correspond directly to reality, independently of their semantic import, and the utterance itself is assigned a power which seems to bear no correspondence with the meaning of the words. The hermeneutical complication introduced by the fact that this text is preserved only in Greek has naturally been noted and commented upon.[38]

Earlier in Greek history, from around the fifth century BC, there is evidence of similar formulas of legendary foreign origin, the so-called 'Ephesian letters' (Ἐφέσια γράμματα),[39] and of 'meaningless

---

[36] J. D. Wild, *Plato's Theory of Man* (Harvard University Press, 1946), 281.

[37] *Corpus Hermeticum*, ed. A. D. Nock and A.-J. Festugière, 4 vols. (Paris: Les Belles Lettres, 1972), II, 232 (hereafter cited as Nock-Festugière). The opposition λόγος–ἔργον was customary; see *Corpus Hermeticum Deutsch*, 1, 206. Cf. also Dieleman, *Priests, Tongues, and Rites*, whose first pages are based on this passage, and J. Ritoré Ponce, *La teoría del nombre en el neoplatonismo tardío* (Cádiz: Universidad de Cádiz, 1992), 198.

[38] See *Corpus Hermeticum Deutsch*, 200–201, and Dieleman, *Priests, Tongues, and Rites*, 4. On possible Jewish influence, see Bohak, 'The Impact of Jewish Monotheism', 8ff.

[39] The form reported by Hesychius is ασκι κατασκι λιξ τετραξ δαμναμενευς αασια; see D. Jordan, 'Ephesia Grammata at Himera', *Zeitschrift für Papyrologie und Epigraphik*, no. 130 (2000): 106.

names' (ἄσημα ὀνόματα),[40] deemed to possess apotropaic powers.[41] Under another label, *defixa nomina*, they are common in amulets and talismans, both pagan and Christian,[42] and in the also early attested *defixiones*, curse tablets, 'inscribed pieces of lead intended to influence, by supernatural means, the actions or the welfare of persons or animals.'[43]

V. Magical Papyri

All those powerful unsemantic utterances are a major component of what has come to be called generically the 'Magical Papyri', a collection of very early texts in Demotic,[44] Coptic or Greek, preserved in Egypt and representing very clearly the Hellenistic syncretism between Egyptian, Greek and Jewish religions. As with Hermetism in general, they are still associated primarily with Greek culture, and still often referred to as 'Greek Magical Papyri', in spite of the recurrent coexistence of Greek and Demotic texts on the same pages, which attests to a very developed synthesis between Egyptian and Greek literature.[45]

It may be useful to point out that this 'influence by supernatural means' is not quite so 'supernatural', but rather 'natural' within the worldview under study in the preceding pages; or perhaps what should be made clear, in due fairness to our contemporary views, is that the ancient concept of nature was more 'supernatural' altogether. The power of the phonemes of a given 'primordial' language – which could be other than Egyptian – [46]

---

[40] See Jamblichus, *De mysteriis*, 7, 4–5, where the expression is used and the matter discussed in detail. Cf. also S. Crippa, 'Les marges du langage dans les contextes sacrés: φθόγγος, φθέγγομαι', chap. 18 in *Manières de penser dans l'Antiquité méditerranéenne et orientale: Mélanges offerts à Francis Schmidt*, ed. C. Batsch and M. Vârtejanu-Joubert, Supplements to the Journal for the Study of Judaism 134 (Brill, 2009), 269.

[41] Cf. Plutarch, *Quaest. Conv.* 706e1.

[42] See I. Velázquez, 'Intersección de realidades culturales en la antigüedad tardía: el ejemplo de defixiones y filacterias como instrumentos de la cultura popular', *An Tard*, no. 9 (2001): 159ff. and Luz, *Technopaignia*, 213. Cf. Ernout-Meillet, *s.v. figo*.

[43] D. Jordan, 'A Greek Defixio at Brussels', *Mnemosyne* 40, nos. 1/2 (1987): 162.

[44] A later stage of the Egyptian language.

[45] See H. D. Betz, ed., *The Greek Magical Papyri in Translation, including the Demotic Spells* (University of Chicago Press, 1986), xlv; E. Suárez de la Torre, 'Himno(s)-plegaria a Hermes en los papiros mágicos griegos', in *Ex Pluribus Unum*, ed. C. Scibonae and A. Mastrocinque (Edizioni Quasar, 2015), 193.

[46] See Betz, *Magical Papyri in Translation*, xlv, for mention of Greek and Hebrew as

is a concomitant of the essential correspondence between human language and cosmic language.

These different kinds of magical unsemantic utterances are also related directly to the Greek literary texts comprised by the term τεχνοπαίγνιον – all manners of wordplay and *jeux d'esprit*, including acrostics, palindromes and pangrams – [47] as has been observed by Luz in her comprehensive monograph.[48]

The main traits of these magical formulas are readily apparent in the several epithets applied to them which we have given above. That they are called *voces* refers to the importance of their enunciation: they are normally to be uttered aloud, even though in some exceptional cases a personal silent 'saying' is asked for.[49] This may partly explain why the vowels occupy such a prominent place in this magical literature, reminding us of the special cosmological status accorded to vowels by the Greek grammarians. We find in the papyri, for instance, instructions for the recitation of 'the heptagram', the seven vowels αεηιουω in many complex and inventive variations.[50]

Voces, like the Greek φθόγγοι ἐναρμόνιοι 'harmonic utterances',[51] also indicates that they are not necessarily words, but merely vocal sounds, ἄσημα, unsemantic, as shown by another epithet. Sometimes they are instead called γράμματα, letters, referring to the graphic aspect which is such a remarkable feature of the magical papyri,[52] where page after page is filled with all sorts of geometric letter arrangements: mirroring layouts

---

two examples.

[47] A pangram or holoalphabetic sentence is a sentence using every letter of a given alphabet at least once.

[48] Luz, *Technopaignia*, 213–22.

[49] Cf. K. Preisendanz and A. Henrichs, eds., *Papyri Graecae Magicae. Die griechischen Zauberpapyri*, 4 vols. (Leipzig/Berlin: Teubner, 1928–1941) (hereafter cited as PGM), 3, LXXVII, 5, θυμῷ μηδὲν λαλήσας, 'in the heart, saying nothing aloud.'

[50] See Betz, *Magical Papyri in Translation*, 190.

[51] See Crippa, 'Les marges du langage', 269.

[52] There is an elaborate and subtle underlying theory here, as 'towards the end of antiquity, [there is] a rapprochement, not only terminological, between the meaning of language and the meaning of images'; see C. Marmo and S. Bonfiglioli, 'Simboli, voci, oggetti et similia. Note di discussione su: F. Lo Piparo, *Aristotele e il linguaggio. Cosa fa di una lingua una lingua*', *Histoire Épistémologie Langage (Les syncatégorèmes)* 25, no. 2 (2003): 161–194.

which play on palindromes of varying extension, diminishing lines which form pyramids and triangles, and many other graphic devices.[53]

α
ε ε
η η η
ι ι ι ι ι
ο ο ο ο ο
υ υ υ υ υ υ
ω ω ω ω ω ω ω

Another remarkable use of the vowels, and an additional example of the significance of the symbolism of *alpha* and *omega* is the following array which in the original concludes with the exclamation 'Jesus Christ, help!'[54]

A Ω
Ω A
A Ω
Ω A
A Ω
Ω A
A Ω

With regard to the pairing of *alpha* and *omega*, and further to my previous comments, it has been noted[55] that among the most distinctive features of the magical papyri is a strong tendency towards 'circularity', towards closing strings of letters in the manner of a palindrome,[56] joining beginning and end to thus symbolically encircle and subdue the object of the spell. Once again, as with the acrostics, it can be seen that the magic power

---

[53] See Dornseiff, *Alphabet*, 63–7; Luz, *Technopaignia*, 215; and especially A. Vasiliu, '*Eikôn præter imaginem*. Notes sur le vocabulaire de l'image à la fin de l'Antiquité', in *De Zénon d'Élée à Poincaré. Recueil d'études en hommage à Roshdi Rashed* (Louvain: Peeters, 2004), 796–8, for notable insights into the Platonic doctrines related to 'onto-images'. The following example is from *Suppl. Mag.* 7.

[54] D. Wortmann, 'Neue magische Texte', *Bonner Jahrbücher* 168 (1968): 106.

[55] E. Szepes, 'Magic Elements in the Prayers of the Hellenistic Magic Papyri', *Acta Antiqua Academiae Scientiarum Hungaricae Budapest* 24, nos. 1-4 (1976): 215–16, 222. Cf. above, p.110 for the Hebrew equivalent.

[56] *Ibid.*, 216, with a reference to the Ouroboros.

(in other contexts cosmogonic) is related to a 'catalogue' of the creative elements, to reciting as one would recite the alphabet, without omitting any element. There seems to be a creative power in the self enclosing totality of the *system* of elements. In the case of Christ it seems obvious, as perceived by the author of the *Mysteria litterarum*, that when he is called *alpha* and *omega*, the remaining letters of the alphabet are to be understood as well – he is *all* the letters.

The recourse to the Christian invocation, insofar as it has to do with an organised religion, can be related to the epithet of *mysticae*, for this adjective refers to the mysteries of Greek and Roman religion. The religious status of magic, between marginal superstitious and mainstream respectable practice, cannot in most cases be decided clearly, especially in the Egyptian context in which some of the practices later associated exclusively with magic were part of the priestly duties.[57] Initiation, religion and magic meet inextricably in the use of these 'utterances' and 'letters'.

That they are 'Ephesian' typifies their being perceived as foreign, as alien. According to many scholars over the centuries, it is in great part due to this feature that they retain an aura of mystery and that their utterance commands awe and reverence. 'Ephesian' also, and more particularly, meant 'Eastern', or at the very least open to the East, and indeed, one of the most repeated linguistic traits of these *voces* is the abundance of Semitic word endings like -ηλ and -ωθ.[58]

When they are called *defixa*, what is emphasised is their irrevocability, for there is no reversing an utterance, and in this we find again the image of the seal and the *fixity* of its imprint. Related meanings of *defigo* include 'to bind' and 'to impress'. In a primary and very practical sense, the spells relate to a menial action: to fix or attach something with nails, stakes, 'to plant' something, like determining boundaries on a field (*defigere*

---

[57] See E. Suárez de La Torre, M. Blanco Cesteros and E. Chronopoulou, 'A la vez igual y diferente: notas sobre el vocabulario "religioso" de los textos mágicos griegos', in *Estudios sobre el vocabulario religioso griego*, ed. E. Calderón Dorda and S. Perea Yébenes, Monografías de Antigüedad Griega y Romana 49 (Madrid–Salamanca: Signifer Libros, 2016), 210, 228.

[58] Respectively the Hebrew name of God, as in *Isra-El*, and the Heb. feminine plural ending as in Rehov-ot; see Luz, *Technopaignia*, 214.

terminos), or like carving letters on a monument (*defixa monumentis nomina*).[59]

VI. The Twenty-Four Alphabetic Names of Gods

That they may be called also ὀνόματα, 'names', refers to how the utterances of power can be considered as concepts which are simultaneously viewed in their elementary quality. In Orphic literature, as also in Jewish rabbinical texts, it is not uncommon to find long lists of the names of God or a god, or the names of Metatron.[60] In the papyri we have one particular example where the name-letter conjunction comes into focus very strikingly, namely in a fifth-century love charm[61] where the 'daimons' are conjured by 'the true one' named with an alphabetic acrostic list of names, i.e., twenty-four names, each starting and ending (with two exceptions) successively with the Greek letters; it starts,

Ἀκραμμαχαμαρι Βουλομεντορεβ Γενιομουθιγ Δημογενεδ Ἐνκύκλιε...

Akrammachamari Boulomentoreb Geniomouthig Demogened ...

Wortmann calls them the 'Gods of the Twenty-Four Letters' and the 'Twenty-Four Gods of the Alphabet',[62] while drawing attention to the unique nature of this spell, and observing that some of the names, e.g. Θωθουθωθ, read like palindromes, while others are just short of being palindromes, e.g. Φιμεμαμεφ. A fair inference of a hypothetical model for this kind of construction would be an acrostic list of twenty-four palindromes, beginning and ending with each letter of the alphabet.

---

[59] *OLD*, *s.v. defigo*.

[60] See Odeberg, *3 Enoch*, I, 170 and II, 160, but these lists go back to at least the second millenium BC in both Indo-European and Semitic texts; cf. J. Myerston, 'Divine Names in the Derveni Papyrus and Mesopotamian Hermeneutics', *Trends in Classics* 5, no. 1 (2013): 74–110, for refs. to *Enuma Elish* and relations to Orphic hymns. Cf. also in general Dornseiff, *Alphabet*, 145–6, and A. Uždavinys, *Philosophy as a Rite of Rebirth* (Westbury, UK: The Prometheus Trust, 2008), 23–24, for Egyptian parallels.

[61] Cologne, Papyrussammlung P. 3323; Wortmann, 'Neue magische Texte', 88, 98–9, including photographs of the text. Translation in Betz, *Magical Papyri in Translation*, 308, no. 101; this is not in PGM.

[62] Wortmann, 'Neue magische Texte', 87, 98.

One final example from the papyri shows clearly the ambiguity and the cosmic status of *stoicheia* which are central to this research. It is a love charm that begins with an impressive letter geometrical arrangement and is followed by this,

Ἐξορκίζω σε τῶν δώδεκα στοιχεῖων τοῦ οὐρανοῦ καὶ ἰκοσιτέσσερα στοιχεῖων τοῦ κόσμου...	'I adjure you by the twelve *stoicheia* (constellations) of heaven and the twenty-four *stoicheia* (elements) of the world…'[63]

We had seen that *stoicheia* could be used for the constellations, but what to make of those 'twenty-four elements of the world'?[64] They are normally four only, or five, but due to a slip perhaps, or due to what was an all too easy assimilation, the number of the letters of the alphabet is transposed to that of the superior elements. The other possibility might be that the 'world' mentioned here were referring to an abstract conceptual world, but in that case the contrast between heaven and world would not be easy to explain.

In the context of magical literature, this usage of the 'twenty-four letters' also reminds us strongly of the influential magical *materia medica* entitled *Kyranides*, also ascribed to 'Hermes Trismegistos the god',[65] and also exhibiting most of the features mentioned above, wherein stones, herbs, fish and birds are grouped under the Greek letters in alphabetic order. In this arrangement, the letters act as an intermediary ordered array between the 'alphabet in heaven' and the 'alphabet of things'.[66]

Trying to sum up the findings in the papyri and their formal relations to Hermetism, it may be noted that among the most important characteristics of the spells and invocations are their oriental character, the rhythmic repetition of certain words or sounds and the listing, often exhaustive,

---

[63] PGM, 2, XXXIX, 18; Betz, *Magical Papyri in Translation*, 279.

[64] 'World' is a more apt translation of κόσμος here in contrast to heaven; cf. Jn. 13:1 ἡ ὥρα ἵνα μεταβῇ ἐκ τοῦ κόσμου τούτου πρὸς τὸν Πατέρα, 'the time for him to depart from this world towards the Father.'

[65] D. Kaimakis, ed., *Die Kyraniden* (Meisenheim am Glan: Hain, 1976), prologue, l. 5.

[66] See C. F. Fraker, 'Hermes Trismegistus in the *General Estoria II*', in *Medieval Iberia: Changing Societies and Cultures in Contact and Transition* (Tamesis Books, 2007), 96–7; also I. Toral-Niehoff, *Kitāb Ğiranīs: Die arabische Übersetzung der ersten Kyranis des Hermes Trismegistos und die griechischen Parallelen*, Quellen und Forschungen zur antiken Welt 43 (München: Herbert Utz Verlag, 2015), 11.

of the divine attributes,[67] which are all common features of the more 'practical' Hermetica.[68] Letter 'acrobatics', graphic and phonetic, and isopsephic arrangements are found all over the texts and go hand in hand with the above features, as in a display of craftsmanship, of the mastery of order and rhythm, moving from a discursive 'logic of concatenation' to an 'iconic expansive logic', transmitting meaning simultaneously on several levels through the 'semiotic superposition'[69] characteristic of ancient poetry as in Greek calligrams, Roman *carmina figurata* and all sorts of 'pattern' or 'concrete' poetry.[70]

There is a clear specular relation between the pattern complexity of the magic formula and the complexity of the reality that is to be altered – in each of them the basis of the intelligibility and of the constitution on every level is order,[71] which, as we had found in the first two chapters, is the most prominent of the characteristics of the *stoicheia* and is directly related to its numeric aspect.

Regarding the relation between Hermetism and these magic texts, there is on one hand the fact that many of the texts are explicitly related to Hermes,[72] and it is true that 'the magician who intends to enter the mysteries by means of the voice and the name, recognises Hermes Psychopomp and Hermes Thoth as his master, as god of gnosis, incarnation

---

[67] H. Björklund, 'Invocations and Offerings as Structural Elements in the Love Spells in *Papyri Graecae Magicae*', *Journal for Late Antique Religion and Culture*, no. 9 (2015): 46–7.

[68] 'The Hermetic authors felt no obligation to respect the boundaries drawn around their writings by modern critics,' Copenhaver, *Hermetica*, xxxix.

[69] Cf. P. G. Leal, 'O espelho dos hieróglifos: da ruína das letras egípcias à sua reinvenção quimérica entre os séc. XV e XVII' (PhD diss., Universidade Federal do Rio Grande do Norte, Brazil, 2008), 106; and S. Lojkine, '«Dans le moment qui précède l'explosion...» – Temporalité, représentation et pensée chez Diderot', in *Zeitlichkeit in Text und Bild*, ed. F. Sick and C. Schöch (Heidelberg: Universitätsverlag Winter, 2007), 57.

[70] See A. Pappas, 'The Treachery of Verbal Images: Viewing the Greek *technopaegnia*', in *The Muse at Play: Riddles and Wordplay in Greek and Latin Poetry*, ed. J. Kwapisz, D. Petrain and M. Szymański, Beiträge zur Altertumskunde 305 (Walter de Gruyter, 2013), 199.

[71] A. Mastrocinque, 'Le pouvoir de l'écriture dans la magie', *Cahiers « Mondes anciens »*, no. 1 (2010): 37.

[72] See Suárez de la Torre, 'Himno(s)-plegaria a Hermes en los papiros mágicos griegos', 199–201.

of the *logos*,'[73] but beyond the explicit mention of the Graeco-Egyptian deity, there is no way to ignore that all this magical literature is Hermetic in substance: it is after all, and here I refer at once to several previous sections of this work, a *communication* established by the *mediation* of *language* with the purpose of *generating* change. Such manipulation of concepts and numbers, and the concomitant mirroring just mentioned, as foundations of a method of influencing the world, are very close to the foundation of scientific *and* religious endeavours, and most likely the reason why at times magic and science, and at times religion and science, have been considered to be two sides of one coin.[74]

A. Gnostic Writings

As in the case of the Hermetic writings, the label of 'Gnostic' developed into an umbrella term that has been considered 'highly problematic', 'obscuring distinctive characteristics', and finally 'a term that lost its utility.'[75] This extreme syncretic 'Gnosticism' is however one end of a spectrum ranging between two main meanings: first, one narrow and more strictly historical which is the name given, often deprecatingly, to ancient Christian sects, the γνωστικοί or 'gnostics', literally 'the ones acquainted' (sc. with God); and second, that broader, problematic and variegated meaning, which ranges from Christian heterodoxy to Orphic, Hermetic, Mandaean, Jewish, and Islamic texts.[76] What most Gnostic writings have in

---

[73] See Ritoré, *La teoría del nombre*, 196.

[74] See C. Webster, *From Paracelsus to Newton: Magic and the Making of Modern Science*, The Eddington Memorial Lectures (Cambridge University Press, 1982), 1, 57.

[75] A thorough monograph on this topic is M. A. Williams, *Rethinking 'Gnosticism': an argument for dismantling a dubious category* (Princeton University Press, 1996). See also, more recently, J. Lahe, *Gnosis und Judentum: alttestamentliche und jüdische Motive in der gnostischen Literatur und das Ursprungsproblem der Gnosis*, Nag Hammadi and Manichaean Studies 75, originally presented as a PhD thesis–University of Tartu (Leiden: Brill, 2012), 11ff. and K. van Bladel, 'Gnosticism', *Encyclopaedia of Islam, THREE*:83.

[76] B. Layton, *The Gnostic Scriptures*, The Anchor Bible Reference Library (New York: Doubleday, 1987), 49; Williams, *Rethinking 'Gnosticism'*, 42–3. 'Some texts of magical prayers show a conflation of tendencies, or at least vocabulary analogies between Hermetic gnosis and Judeo-Christian gnosis,' M.-T. D'Alverny, review of *La Révélation d'Hermès Trismégiste. I: L'astrologie et les sciences occultes* by A.-J. Festugière, *Bibliothèque de l'École des chartes* 105, no. 1 (1944): 268.

common, and it is in this that they are related to Hermetism, is in what their name itself points to, a direct approach to 'salvific esoteric knowledge' (γνῶσις),[77] to initiatic mysteries.[78] This Gnostic claim to 'real knowledge' comes often in the form of a distinctive cosmology, and it is among such doctrinal writings that the alphanumeric symbolism is occasionally found. With the exception of Marcus the Valentinian[79] (second century AD) however, there is nothing like a systematic cosmology, but fragmentary evidence gained mostly from Coptic translations of hypothetical original lost Greek texts, or in some cases of possible Syriac origin.[80] I shall now comment on passages from two works of the Nag Hammadi Library (NHL),[81] before introducing Marcus' text. I shall refrain from entering into the details, and especially from trying to make sense of the cosmological complexities of the texts in this section, which are of a bewildering oneiric nature, continually challenging the experts, and which are in general beyond the ken of the present research. I shall instead limit myself to draw attention to the interesting aspects of alphanumeric symbolism found in them.

I. Evangelium Veritatis

The *Gospel of Truth*,[82] approximately dated between 140 and 180 AD, begins with a so-called 'Litany of the Word',

---

[77] DGWE, vii–viii.

[78] 'Gnostic and Hermetic texts pullulate with the words *mysteria* and *mystikos*,' W. Burkert, *Antike Mysterien, Funktionen und Gehalt* (München: Verlag C. H. Beck, 1990), 57.

[79] The followers of Valentinus (d. ca. 160), particularly given to theological speculation, constituted one of the largest and best known Gnostic schools, active throughout the Roman Empire. Marcus and the Marcosians after him should not to be confused with fellow Valentinian and famous heresiarch Marcion of Sinope and the Marcionites; cf. Layton, *The Gnostic Scriptures*, 217ff.

[80] *The Nag Hammadi Library in English*, ed. J. M. Robinson (New York: HarperCollins, 1990), 12; *Nag Hammadi Deutsch: Studienausgabe. NHC I–XIII, Codex Berolinensis 1 und 4, Codex Tchacos 3 und 4*, 3rd ed., de Gruyter Texte (De Gruyter, 2013), 19.

[81] This all-important treasury of Gnostic literature was only discovered in 1945, and it was thus unavailable to Dornseiff. About the non-Gnostic contents of NHL, see G. Quispel, *Gnostica, Judaica, Catholica. Collected Essays of Gilles Quispel*, ed. J. Oort, Nag Hammadi and Manichaean Studies 55 (Brill, 2008), 212.

[82] Nag Hammadi Codex I (henceforth NHC I). *Nag Hammadi Deutsch*, 18ff.

This is the knowledge of *the living book* which he revealed to the aeons, at the end, as his letters, revealing how they are not vowels nor are they consonants, so that one might read them and think of something foolish, but *they are letters of the truth* which they alone speak who know them. *Each letter is a complete (thought) like a complete book*, since they are letters written by the Unity, the Father having written them for the aeons in order that by means of his letters they should know the Father. While his wisdom contemplates the Word, and his teaching utters it, his knowledge has revealed it.[83]

Most Gnostic texts elaborate profusely on various aspects of the Christic nature, hence on the nature of the *logos* and its relation to God the Father. Particularly interesting here is the clear identification between the incarnate Son of God and a linguistic reality which is not limited to being defined as Word, but also as book and as utterance. The *aeons* (from αἰών, an 'age, lifetime, era') constitute 'an entourage of mythopoetically personified eternal divine attributes'[84] varying in number and in ontological status in the different Gnostic mythologies. Some speak of 365 aeons; other sources specify eight, twelve or, as we shall see later, twenty-four like the number of letters of the Greek alphabet.

The identification between letters and names which we had encountered previously is here expanded: each letter may be viewed not only as a word and as a name, but also as a book, and more precisely as a living book. They are also clearly distinguished from ordinary vowels or consonants, these are 'letters of the truth' or, we might say, symbolic letters.

This is the perfection in the thought of the Father, and these are the words of his meditation. Each one of his words is the work of his one will in the unveiling of his Speech. While they were still depths of his thought, the *Logos*, which was first to come forth, revealed them along with a mind that speaks, the one *Logos* and a silent grace […] Now the name of the Father is the Son […] It is possible for him to be seen. The name, however, is invisible because it alone is the mystery of the invisible which comes to ears that are completely filled with it by him. For indeed, the Father's name is not spoken, but it is apparent through a Son […] This name does not belong to words, nor does it consist of appellations, but it is invisible.[85]

Let us retain some of the above cosmogonic statements, rather as an

---

[83] I, 22ff.; *Nag Hammadi Library*, 43, highlighting mine.

[84] Williams, *Rethinking 'Gnosticism'*, 10.

[85] I, 37ff.; *Nag Hammadi Library*, 48–50; I have slightly edited Robinson's in view of the German translation.

imagery that we may have later occasion to compare: the 'thought' of the Father is an intermediary locus where the word/name of the Son is uttered beyond language, for it is 'invisible', 'not spoken'. Like in the previous passage, what stands out here is the affirmation of a symbolic usage of the linguistic imagery.

II. Marsanes

Marsanes (after the name of a gnostic prophet) is one of the so-called 'Sethian'[86] Gnostic treatises in the Nag Hammadi corpus. Probably written in the third century AD, its metaphysics and ritual references have been related to those of Iamblichus.[87] In fact, one of the reasons for supposing that the text is originally Greek is the occurrence of letter symbolism[88] and of ritual nomenclature of gods and angels.[89]

The text of this treatise is very damaged, but fortunately the section devoted to letter speculation is in relatively good condition. In the following lines I try to reconstruct the meaning of a few isolated passages, following mostly Funk's German rendition.[90]

> The soul too has its shape, and of a different kind. The shape of the soul, which came to be on its own, has the following form: the shape is a secondary spherical part around which lies a primary part, ε η ι ο υ, and for the self-begotten soul, α ε η ι ο υ ω. The second shape ε η ι ο υ comes to be through the diphthongs… Know that the sublime ones exist among the vowels, and the diphthongs are next to them… The sounds of the semivowels are superior to the voiceless, and those that are double are superior… They constitute the names of gods and angels, not because they blend with each other according to every form, but in order to produce a beneficial effect.[91]

It would be irresponsible to elaborate much on this text without examining the Coptic original, which is beyond my competence, but what is clear once again is that the internal structure of the alphabet and its phonetic divisions have a cosmological value, in other words, that the classification

---

[86] For the special role of Seth in Gnostic literature, see Lahe, *Gnosis und Judentum*, 283; and Williams, *Rethinking 'Gnosticism'*, 90–93.

[87] NHC X. See *Nag Hammadi Library*, 460ff.

[88] *Nag Hammadi Deutsch*, 498.

[89] *Nag Hammadi Library*, 462.

[90] *Nag Hammadi Deutsch*, 505.

[91] X, 26–28. *ibid.*; *Nag Hammadi Library*, 466–67.

of the phonemes reflects an ontological hierarchy. In particular, we find here again the combinations of the vowels that we had encountered in the magical papyri, pointing once again to a fundamental relation between phonetics, magic and cosmogony. Further down (29–30), the length of the vowels is also taken into account, and there is question of the consonants in some more detail:

> The consonants exist together with the vowels, and indeed as independent too; they are placed before them and after them; they serve as names of the angels; they exist on their own and they differentiate, and they lead and are led by the hidden gods by means of stress, pitch, quiescence and point of articulation; they summon the semivowels…

At this point, it is perhaps possible to start seeing a pattern in the broader distinctions between vowels and consonants. Let us, for the time being, simply retain the fact that *the consonants are said to 'differentiate'*, and that in spite of their name of con-sonants, they are metaphysically considered to be capable of certain autonomy.

A few lines below (32–33), there is question of numerical cosmology, with the cosmogonic correspondences of the monad, the dyad, the tetrad and so on, culminating with the decad 'which has laid bare all things', and with Eleven and Twelve 'which have completed the traverse through to the unlimited.' Due to the state of the manuscript it is not possible to clarify what is the relation between the numerical and the alphabetic series, but I shall have occasion to reexamine this in the following pages.

> The vowels are connected to the consonants either externally or internally […] they were numbered four times, they were engendered three times, and they became twelvefold… (39) Whether he is gazing at the two or he is gazing at the seven planets or at the twelve signs of the Zodiac or at the thirty-six Decans…, whether those in heaven or those upon the earth, together with those that are under the earth… they stand alone…

There seems to be a progression from the abstract alphabetic symbols and the numerical hierarchy to the cosmic correspondences, but as mentioned above the state of the text does not warrant further speculation, and is instead illuminated by similar passages found elsewhere. The *Gospel of the Egyptians* (NHC III, 2; IV 2) and the *Interpretation of Knowledge* (NHC XI,1), for instance, contain descriptions of the 'self-originating Word', its origin in 'heavenly Silence' and its relation to the Son.

III. Marcus the Valentinian

Marcus 'the Magician' (*ca.* second century AD), morally criticised and doctrinally preserved by Irenaeus of Lyon, and after him by other early church authorities, is customarily viewed as a 'Neo-Pythagorean' among Gnostic authors,[92] and is thus an obligated reference for alphanumeric symbolism; this is why in a previous chapter we found him mentioned as a parallel to the speculationsof the *Mysteria literarum*.[93] It has been the case, however, that most material related to Marcus focused on the first part of Irenaeus' critique in *Adversus haereses* (I, 13–21),[94] where there is question of the debauchery of the Marcosians, until Förster's comprehensive monograph was published,[95] taking into account the full critique of Irenaeus, his followers, and later Syriac and Arabic sources. I shall make use of Rousseau's critical edition (1979) to present a slightly modified translation based on Harvey (1857), all in the light of Förster's monograph.

Τὰ γὰρ Ἀναξιλάου παίγνια τῇ τῶν λεγομένων μάγων πανουργίᾳ συμμίξας, δυνάμεις ἐπιτελεῖν δοκεῖ.	Combining the pranks of Anaxilaus with the craftiness of so-called magicians, he gives the impression of accomplishing wonders.[96]

Anaxilaus of Larissa was a Pythagorean philosopher famous for his magical exploits, and particularly for a sort of alchemical transmutation.[97] It may be noted how the first influence in Marcus' picture is that of the παίγνια, which has a general meaning of divertissement but which can refer more specifically to word plays, as in the term τεχνοπαίγνιον which we had already encountered.

Starting from the general Gnostic principle that the upper world has its reflection in our lower world, Marcus develops a complex cosmogonic

---

[92] D. Bueno Donadon, '*Adversus haereses* de Ireneu de Lyon: tradução e comentários' (PhD diss., Universidade Estadual de Campinas, Instituto de Estudos da Linguagem, 2011), 44.

[93] Bandt, *Vom Mysterium*, 83–5.

[94] That is, starting from I, 7 in Harvey's numeration. I follow henceforth Rousseau's sectioning.

[95] N. Förster, *Marcus Magus: Kult, Lehre und Gemeindeleben einer valentinianischen Gnostikergruppe*, Wissenschaftliche Untersuchungen zum Neuen Testament 114 (Tübingen: Mohr Siebeck, 1999).

[96] I, 13, 1.

[97] See Förster, *Marcus Magus*, 62.

system based on the initial silence, on words, 'syllables' and letters arranged in groups of varying quantity. 'When Father, who is without a father, unthinkable and immaterial in substance, who is neither male nor female, first wished that the unspeakable be spoken and the invisible be given form, he opened his mouth and brought forth the Word similar to himself.'[98]

Ἡ δὲ ἐκφώνησις τοῦ ὀνόματος ἐγένετο τοιαύτη· ἐλάλησε **λόγον** τὸν πρῶτον τοῦ ὀνόματος αὐτοῦ, ἥτις ἦν **ἀρχὴ**, καὶ ἦν ἡ συλλαβὴ αὐτοῦ **στοιχείων** τεσσάρων. Ἐπισυνῆψε τὴν δευτέραν· καὶ ἦν καὶ αὐτὴ στοιχείων τεσσάρων. Ἐξῆς ἐλάλησε τὴν τρίτην· καὶ ἦν καὶ αὐτὴ στοιχείων δέκα. Καὶ τὴν μετὰ ταῦτα ἐλάλησε· καὶ ἦν καὶ αὐτὴ στοιχείων δεκαδύο. Ἐγένετο οὖν ἡ ἐκφώνησις τοῦ ὅλου ὀνόματος στοιχείων μὲν τριάκοντα, συλλαβῶν δὲ τεσσάρων. Ἕκαστον δὲ τῶν στοιχείων ἴδια **γράμματα**, καὶ ἴδιον **χαρακτῆρα**, καὶ ἰδίαν ἐκφώνησιν, καὶ σχήματα, καὶ εἰκόνας ἔχειν.

The utterance of the name developed in the following manner. He pronounced the first *word* of his name, which is a *principle*: it was a combination of its four *phonemes*. He joined a second to it which was also a combination of four phonemes. Next he pronounced the third: this too consisted of ten phonemes. And the combination that he pronounced after these had twelve phonemes. So the pronunciation of the whole name consisted of thirty phonemes, but only four combinations, and each of the phonemes had its own *letters*, its own *tracing*, its own pronunciation, shapes, and representations.

This 'alphabet' of thirty letters, which Marcus considers the sum of the aeons of the pleroma, is arrived at through different additions. We may remember that the full Greek alphanumeric system used twenty-seven signs: the twenty-four letters plus the three *episema* or supplementary signs, *digamma* ϝ (or *stigma* ϛ), *qopa* ϙ, and *sampi* ϡ. If we add these three and then also count the three existing double letters (ζ, ξ, ψ) as doubles, we arrive at thirty. Alternatively, it is explained later that 'the name of Saviour which can be uttered, that is, Jesus (Ἰησοῦς), has six letters, but his name which cannot be uttered has twenty-four letters. The name "Christ the Son" (Υἱὸς Χρειστὸς) has twelve letters; but the name of Christ that is unutterable (ἄρρητον) has thirty letters. And for this reason he asserts

[98] Irenaeus of Lyon, *St. Irenaeus of Lyons Against the Heresies*, ed. D. J. Unger and J. J. Dillon, vol. 1 (New Jersey: The Newman Press, 1992), 59. A detailed analysis of the following passages is found in J. Kalvesmaki, *The Theology of Arithmetic: Number Symbolism in Platonism and Early Christianity*, Hellenic Studies Series 59 (Washington, DC: Center for Hellenic Studies, 2013), ch. 4.

that he is alpha and omega in order to indicate the dove (περιστερά), since this bird had that number.' Indeed, by isopsephy, the numerical value of περιστερά is 801, like the sum of alpha and omega – this equivalence is often used by Marcus and it is found in other similar literature.

The defining characteristics of each στοιχεῖον, such as its tracing and shape, had been mentioned in the grammatical scholia,[99] and here again, as in previous texts, they are given a cosmological significance that I shall not expand on at the moment.

Another remarkable image of Marcus' cosmology is the famous passage regarding the 'Body of Truth', wherein the Tetraktys personified, who has been revealing all these matters to Marcus, speaks thus:

θέλω δέ σοι καὶ αὐτὴν ἐπιδεῖξαι τὴν Ἀλήθειαν. Κατήγαγον γὰρ αὐτὴν ἐκ τῶν ὑπερθεν δωμάτων, ἵν' ἐσίδῃς αὐτὴν γυμνὴν, καὶ καταμάθοις τὸ κάλλος αὐτῆς· ἀλλὰ καὶ ἀκούσῃς αὐτῆς λαλούσης, καὶ θαυμάσῃς τὸ φρόνημα αὐτῆς. Ὅρα οὖν κεφαλὴν ἄνω, τὸ ἄλφα καὶ τὸ ω, τράχηλον δὲ β καὶ ψ, ὤμους ἅμα χερσὶ γ καὶ χ, στήθη δ καὶ φ, διάφραγμα ε καὶ υ, νῶτον ζ καὶ τ, κοιλίαν η καὶ σ, μηροὺς θ καὶ ρ, γόνατα ι καὶ π, κνήμας κ καὶ ο, σφυρὰ λ καὶ ξ, πόδας μ καὶ ν.

I also wish to show you Truth itself. I have brought her down from the dwellings on high that you might look on her naked and examine closely her beauty, and indeed that you may also hear her speak and marvel at her wisdom. See, then, *alpha* and *omega* are her head on high; *beta* and *psi* are her neck; *gamma* and *chi* are her shoulders and hands; her breast is *delta* and *phi*; *epsilon* and *upsilon* are her diaphragm; *zeta* and *tau* are her stomach; *eta* and *sigma* are her private parts; *theta* and *rho* are her thighs; *iota* and *pi* are her knees; *kappa* and *omicron* are her legs; *lambda* and *xi* are her ankles; *mu* and *nu* are her feet.[100]

This reduction of the twenty-four letters to twelve duplets, in this case following the *atbash* order,[101] is a variation of the Hellenistic astrological correspondence which followed the *albam* order.[102] Both are kinds of *melothesia*, the correspondence between parts of the body and zodiacal signs.[103] The alphabet would seem to perform a mere numerical function

---

[99] See above, p. 24, and Förster, *Marcus Magus*, 198–99.

[100] I, 14, 3; Unger/Dillon (eds), *Against the Heresies*, 61.

[101] From the Hebrew equivalent of pairing alternating end letters, *alef-taw, bet-shin*, etc. An English equivalent order would be *a-z-b-y-c…*

[102] Also named after a Hebrew pairing *alef-lamed, bet-mem*, etc. or, rather common, α-ν, β-ξ, γ-ο etc. See Dornseiff, *Alphabet*, 84–6.

[103] See Förster, *Marcus Magus*, 224–25, for references to iatromathematical texts.

as an ordered set that lends itself to distributive ordering, but given the cosmological background, it is rather safe to assume that something more was at play, and that the alphabet here performed yet again a fully alphanumeric function. Through the alphabet, that is, through the elements, the 'human' figure is tallied with the duodecade of the heavenly sphere.[104]

Every few paragraphs along these explanations, Irenaeus takes an opportunity to condemn Marcus and even openly mock and ridicule the convoluted doctrine. He does so after this alpha-anatomical passage, and then continues: 'When that Tetrad had spoken these things, Truth looking at Man and opening her mouth uttered a word. The word became a name, and the name was the one that we know and speak, *Christ Jesus*.'

Jesus is defined in many ways, interchangeably with his name and many numerical possibilities: 'the name of Jesus, according to the number to which the letters correspond, is eight hundred and eighty-eight. And so you have clearly [stated] also the supercelestial origin of Jesus. For this reason the Greek alphabet has eight units, eight decades, and eight hundreds. Thus it reveals the number eight hundred eighty-eight, that is Jesus, who was composed of all the numbers.'[105]

In view of such taxing explications, it is no great wonder that one can occasionally sympathise with Irenaeus' rants, which unexpectedly can even help us to have a concise look at the exposition, *e.g.*,

> Who will put up with you who confine the Builder, Craftsman and Maker (Κτίστης καί Δημιουργός καί Ποιητής) of all things, the Word of God, to figures and numbers – now thirty, now twenty-four, now only six – and then chop Him up into four combinations and thirty characters? With you, who reduce to the number eight hundred and eighty-eight the Lord of all things who established the heavens, *as if He had become like the alphabet?* With you who subdivide into a Tetrad, Ogdoad, Decad, and Dodecad the Father who comprehends all things, but is Himself incomprehensible. With you, finally, who by the multiplications of these numbers explain the Father's nature, which, as you say, is unutterable and unthinkable?[106]

The complaint is essentially on two grounds: first, the seemingly unwarranted complexity, nay, confusion, of the teachings, and second and most

---

[104] See above p. 30.

[105] I, 15, 2; Unger/Dillon (eds), *Against the Heresies*, 65.

[106] I, 15, 5, my highlighting; Förster, *Marcus Magus*, 358ff.

important, the perceived metaphysical absurdity, in the proper sense of dissonance, between two levels of reality – 'as if He had become like the alphabet?'

Though it is not my intention to defend the Marcosian doctrine in any way, it must be pointed out that the three names of God used here by Irenaeus refer to professions whose practice is entirely based on design, hence on the use of figures and numbers (σχήματα καὶ ἀριθμούς). Perhaps, invectives aside, if we examine closely an earlier crucial paragraph of the exposition, we can have a glimpse of what this apparently muddled cosmology is conveying in its dizzying symbolism or, as Irenaeus puts it, in its 'abyss of letters'.[107]

At the beginning of I, 14, 2, there is mention of τὰ ὀνόματα τῶν στοιχείων τὰ κοινὰ καὶ ῥητὰ, 'the common and utterable names of the phonemes', which are called by the revealing Tetraktys by the names of aeons, *logoi*, roots, pleromes, etc., giving in effect a list of synonyms of στοιχεῖον, making clear that it does not refer to speech in any mere linguistic sense, but that this is about cosmology, and implicitly also that there are some 'names' of elements/phonemes which are exclusive and unutterable.

I shall refrain from translating the entire passage, which would take me away from my point now,[108] but there are some additional remarkable outcomes from the careful parsing of the succeeding lines which it will be useful to keep in mind:

– this cosmogony distinguishes carefully four instances of the linguistic image: there is στοιχεῖον and γράμμα, and there is the utterance (φωνή) and the sound (ἦχος).[109] The relations between them span the cosmos, and it is the resonance, as an echo, of a superior kind of phoneme which institutes order (διακοσμεῖ) in the lower world and which generated *what had been before the universe.*[110]

---

[107] I, 14, 2; βυθός τῶν γραμμάτων.

[108] Detailed analysis and notes in Förster, *Marcus Magus*, 206–16, and Irenaeus of Lyon, *Irénée de Lyon: Contre les hérésies. Edition critique d'après les versions arménienne et latine*, ed. A. Rousseau and L. Doutreleau, 9 vols. (Editions du Cerf, 1979), 1, 2, 211ff.

[109] This was a technical term in Greek phonetics, but in the context there is an obvious implication of its basic meaning of reverberation.

[110] 'Reason and resonance are fully intertwined. The microcosmic body, like the macrocosm itself, is written in the alphabet of the elements'; L. G. Kelly, *The Mirror of*

– the 'names' of the 'letters' are infinitely divisible internally, meaning that every letter is an infinite in potency.

– the relations between the four instances mentioned above are stages of transformative processes whereby the world is being regenerated through an exchange between a supernal reality (sometimes called 'pleroma') and a lower reality: 'silence becomes sound', 'the invisible name becomes visible…'

B. Conclusion

Similar to Hermetism in a broad sense of the term, and very closely related to early magical literature, Gnosticism is another offspring of a syncretist age, and at one time or another its historical correspondences with Egyptian religion, early Judaism and, especially, with Platonic metaphysics, have been, and continue to be, brought into scholarly focus and studied in the context of early Christian theology.[111]

As I hope to have demonstrated in the preceding pages, a distinct shared domain of these manifestations of Hellenistic religiosity deals with the cosmogonic and cosmological role of language and numbers, and even more specifically, with the alphanumeric entities which can spell, or tell, or calculate a λόγος,ἔργον which in the current context might easily be translated as an 'alphanumeric analogy'. Every 'creation' at every new level is effected through a λόγος, that is, through a mediating reality which is so close to the Creator that it can be said to be its child, and which is so close to the Created that it can be identified with it. This is the foundation of the doctrine of sympathy and its 'vertical chains',[112] for 'the name is congenital (συγγενές) with the god, the sound (φθόγγος) is consubstantial (σύντροφος) with the deity.'[113] The relation is one of *mimesis* or re-presentation or personation. This intermediate nature is

---

Grammar: Theology, Philosophy, and the Modistae, vol. v. 101 (Amsterdam: J. Benjamins, 2002), 150.

[111] E. Moore and J. D. Turner, 'Gnosticism', chap. 10 in *The Cambridge History of Philosophy in Late Antiquity*, ed. L. P. Gerson (Cambridge University Press, 2010), 175.

[112] See D'Alverny, review of *La Révélation d'Hermès Trismégiste. I: L'astrologie et les sciences occultes* by A.-J. Festugière, 268, 'des « chaînes » verticales allant des planètes aux minéraux'.

[113] Crippa, 'Les marges du langage', 270.

according to the 'measures' of the Creator, measures that are interrelated as the letters of the alphabet are. Indeed, according to Plotinus, the *logos* is not a separate hypostasis, but it determines the relation of every hypostasis to its source and its products, serving as a *formative* principle from which the lower realities evolve.[114]

Moreover, and now with a view to the following pages, it is clear that, from the point of view of the στοιχεῖα, every creation as an utterance or an act of writing implies a change of state and is thus a sort of cosmic alchemical operation. What we have just seen in the Gnostic literature, where the 'invisible name is made a visible Son,' parallels clearly Athanasius' ὁ τοῦ Θεοῦ Λόγος ... ἐνηνθρώπησεν, ἵνα ἡμεῖς θεοποιηθῶμεν, 'the Word of God became man so that we might become divine.'[115]

In the following pages I shall start exploring the doctrine of alphanumeric cosmology in Islamic scripture, and then proceed to the earliest related non-scriptural writings, which happen to belong to the alchemical tradition.

---

[114] Cf. Enneads, 3, 5, 9; Uždavinys, *Philosophy as a Rite of Rebirth*, 306.

[115] *De incarnatione verbi*, 54, 3; *PG*, 192B.

Chapter 6

Alphanumeric Cosmology in Islamic Scripture and Exegesis

A. Introduction

The place of the *logos* and its elements in Islam is not only similar to what we have seen in the preceding Abrahamic revelations, but the status of language in Islam is as it were further specified and amplified in comparison. As in Judaism and Christianity, the creation of the world is enacted by divine speech, 'His command (*amr*), when He intendeth a thing, is only that He saith unto it: Be! (*kun*) and it is,'[1] but in addition to this acoustic cosmogony, the imagery of the written word acquires in the Qur'ān an exalted level that in earlier traditions is only to be found in the exegetical literature, not in the scriptures themselves. 'If all the trees on earth were pens (*aqlām*) and all the seas, with seven more seas besides, were ink, still God's words (*kalimāt*) would not be exhausted.'[2] When Muḥammad received his first revelation, he was asked by the archangel to read; *iqra!*, 'read!' was the first word of Islamic scripture,[3] with the same root as *qur'ān*, literally 'the reading'.[4] The verses of the Qur'ān are called

---

[1] Qur'ān 36:82. Unless noted, Qur'ānic translations are mine, following mostly Pickthall, Abdul Haleem or the *Study Quran*. Sura 36, *Yā Sīn*, was called by the Prophet 'the heart of the Qur'ān'.

[2] 31:27, and found also with little variation at 18:109. *Kalima* is the customary rendition of *logos* in the Arabic translations of John; cf. H. Kashouh, *The Arabic Versions of the Gospels: The Manuscripts and their Families*, Arbeiten zur Neutestamentlichen Textforschung 42 (Berlin/Boston: Walter de Gruyter, 2012), 283.

[3] Qur'ān 96:1.

[4] The basic meaning of the root *q-r-'* is 'to gather', 'to collect together' (see Lisān), following the same semantic development of Lat. *lego*. For a rare 'semantic' etymology that gives a perfect cognate of *logos* by association with the root *q-r-n*, see T. Mayer, 'Shahrastānī's *Mafātīḥ al-Asrār*: A Medieval Ismaili System of Hermeneutics', chap. 8 in *The Spirit and the Letter: Approaches to the Esoteric Interpretation of the Qur'an*, ed.

in Arabic *āyāt*, 'signs', with the basic meaning of a referent, a symbol, 'any apparent thing inseparable from a thing not equally apparent,'[5] from a Semitic root found elsewhere with the meaning of 'letters'.[6] Followers of the two previous Abrahamic revelations are called in the Qur'ān 'the people of the Book' (*ahl al-kitāb*). It can hardly be a surprise that Muslims developed over the centuries such a great esteem of calligraphy,[7] or that even to these days the recitation of the Qur'ān can enthuse Muslims of all ages around the world, and it will be hardly surprising that Islamic civilization has been described as 'clearly logocentric'.[8]

Recent overtures in comparative studies of theology and mysticism have been laying bare the deep and very explicit analogies between the ontological status of Christ, *kalimatu Allāh*, the Word of God, and the Qur'ān as *kalām Allāh*, the Speech of God.[9] In this regard, and following the main thread of this research, I shall once again start by focusing on the 'letters', the elementary alphanumeric components of that 'Word' and that 'Speech'.

Based on the Qur'ānic nucleus of terms related to speech, language, reading and writing in different aspects, Abū al-Ḥasan al-Ashʿarī (d. 935) enunciated the mainstream theological position that 'God's speech is uncreated and is coeternal with His essence,' that 'it is neither a sensory sound (*ṣawt*) nor a graphical trace that is manifested in the form of a letter (*ḥarf*, pl. *ḥurūf*),' whereas human 'sounds and letters are created expressive traces (*dalā'il*) of the uncreated divine word.'[10] Far from

---

A. Keeler, S. H. Rizvi and M. Nguyen (Oxford University Press, 2016), 281. The Hebrew cognate *miqrah* is a traditional alternative name for the *Tanakh*.

[5] Lane's *Lexicon*, I, 135, *s.v. '-y*.

[6] The Heb. *ot*, for instance, has two plurals: *otiyot*, with the meaning of 'letters', and *otot*, with the meaning of 'signs'; cf. Klein, *s.v.*

[7] A. Schimmel, *Islamic Calligraphy*, Iconography of Religions, XXII, 1 (Leiden: Brill, 1970), 1–2.

[8] See W. C. Chittick, *The Sufi Path of Knowledge: Ibn al-Arabi's Metaphysics of Imagination* (Albany, NY: Suny Press, 2010), xv.

[9] Cf. R. Shah-Kazemi, *A Muslim Perspective on the Christian Mysteries: 1. The Incarnation, 2. The Crucifixion*, Augustana Distinguished Lectures 2012 (Camrose, Alberta: Chester Ronning Centre for the Study of Religion / Public Life, 2015), 15, for detailed argumentation and references.

[10] As summarised by N. El-Bizri, 'God: Essence and Attributes', in *The Cambridge Companion to Classical Islamic Theology* (Cambridge University Press, 2008), 130–31.

settling the matter, the theological subtleties involved gave rise to a theological *topos*, 'the question of God's speech' (*al-mas'ala kalām Allāh*), or even more specifically 'the question of letter and sound' (*al-mas'ala al-ḥarf wa-al-ṣawt*). Fakhr al-Dīn al-Rāzī (d. 1209) considered the matter too 'difficult and subtle',[11] but it was treated at length by Abū Naṣr al-Sijzī (d. 1052)[12] in his *Refutation of Those who Deny [that God's Speech Consists of] Words and Sounds*. Though mostly polemical in tone, and without entering in any detail into the consideration of the alphabet, al-Sijzī argued that God's speech necessarily implies the discreteness of the phonetic elements, that 'the reality of speech is the articulated elocution (*nuṭq*).'[13]

I. The Linguistic-Logical Aspect

The triliteral root *n-ṭ-q* is of particular interest, since it not only refers to language articulated as an uttered reality, in the sense of the phonetic points of articulation (*khawārij*), but also to the concept of logical articulation, in the Latin grammatical sense of *articulatio*,[14] in close relation to measure (*modus*), and in the sense of the linguistic concept of twofold segmentation, which is very close to the central object of this entire research.[15]

With the development of Arabic philosophy, *manṭiq* was used to translate the Greek λογική for the discipline of reasoning or discerning the laws of truth.[16] Consequently, later authors speak of *al-nuṭq al-khārijī*, the outer articulation, namely speech (*lafẓ*), and of the inner articulation, *al-nuṭq al-dākhilī*, namely 'understanding and perception of the universals'

---

[11] F. al-Rāzī, *Mafātiḥ al-ghayb*, 32 vols. (Beirut: Dār Iḥyā' Turāth al-ʿArabī, n.d.), 1.45.

[12] Also known as Abū Naṣr al-Wā'ilī; see J. Brown, *The Canonization of Al-Bukhārī and Muslim: The Formation and Function of the Sunnī Ḥadīth Canon*, Islam History and Civilization, Studies and Texts 69 (Leiden, Boston: Brill, 2007), 196–99.

[13] A. al-Sijzī, *Al-radd ʿalā man ankara al-ḥarf wa-al-ṣawt*, ed. Muḥammad Bā ʿAbd Allāh (Riyadh: Dār al-Rāyah, 1994), 148.

[14] See below p. 285.

[15] This 'duality of patterning' is Martinet's *double articulation*. See 'Zweifache Gliederung', C. Lehmann, *Phonetik und Phonologie* (Erfurt: Universität Erfurt, 2007), 2.6. More on this topic in my Conclusion below, p. 275.

[16] K. Versteegh et al., eds., *Encyclopedia of Arabic Language and Linguistics*, 5 vols. (Leiden: Brill, 2006), 4.459 (hereafter cited as EALL). An alternative name for this discipline is *al-mīzān*, 'the balance', see *al-Munjid fī al-lugha* (Beirut: Dār al-mashriq, 2005), 816 (hereafter cited as *Munjid*).

(*al-fahm wa-idrāk al-kulliyāt*). 'The reality of language (*nuṭq*) is that it is utterance which surrounds and holds fast meaning in the manner of a belt (*niṭāq*).' It was considered general knowledge that 'language (*nuṭq*) is discrete sounds (*aṣwāt muqaṭṭaʿa*),' and that 'an utterance is not considered language unless it has sound and letters (*ṣawt wa-ḥurūf*) through which meaning is recognised.'[17] It may be clear by now that the expression *ṣawt wa-ḥurūf* means rather 'an acoustic continuum divided into a series of discrete elementary units.'

The two aspects of *nuṭq*, that is the phonetic-linguistic and the conceptual-logical, seem to have inhered in the original usage of the related terms in the Qur'ān, where God is described as 'the one who makes everything speak' (*alladhī anṭaqa kulla shay'in*, 41:21), and where speaking is associated with verification, with the ascertainment of reality: 'All this is as real as your speaking' (*ḥaqqun mithla mā annakum tanṭiqūn*),[18] and 'Our Book speaks (*kitābuna yanṭiqu*) against you with truth.'[19] But the most famous of the occurrences of this root in the Qur'ān is the mention of the *manṭiq al-ṭayr* (27:16), the language of the birds,[20] which Solomon is said to have learnt by God's favour. It is from this passage that ʿAṭṭār took the name of his famous poem, often called in English the *Conference of the Birds*. The language of the birds became a Sufi image for the understanding of the cosmic language, both by 'hearing' and 'reading' the signs of nature, granted to the prophets and saints,[21] and it was perpetuated as a prerogative of magicians and sages in folk Arabic literature. We had encountered Solomon previously[22] as related in rabbinical literature to the origin of acrostics. Indeed, in the figure of this

---

[17] A. Samīn, *ʿUmdat al-ḥuffāz fī tafsīr ashraf al-alfāẓ*, 4 vols. (Beirut: Dār al-kutub al-ʿilmiyya, 1996), 4.190–92.

[18] 51:23, trans. Abdul Haleem; Yusuf Ali elaborates, 'this is the very Truth, as much as the fact that ye can speak intelligently to each other.'

[19] 45:29, trans. S. H. Nasr et al., eds., *The Study Quran: A New Translation and Commentary* (New York: Harper Collins, 2015) (hereafter cited as SQ).

[20] Later also, in the important Persian tradition, *lughat wa zabān-i murghān*; see O. Mir-Kasimov, *Words of Power – Ḥurūfī Teachings Between Shiʿism and Sufism in Medieval Islam* (London: I.B. Tauris, Institute of Ismaili Studies, 2015), 267–71.

[21] Cf. A. al-Ghazālī, *Al-Ghazālī on Conduct in Travel: Book XVII of the* Revival of the Religious Sciences, trans. L. Librande, Ghazālī Series (Cambridge: Islamic Texts Society, 2016), 11–12.

[22] See above p. 109.

prophet-king there is much to consider him a representative *par excellence*, or even the patron of the science of letters as the knowledge of the elements of the universe, whence his epithet, *Magister omnium physicorum*.[23] The Qur'ānic depiction which makes of him, literally, a *manṭiqī* sage, that is, a knower of language in its various 'logic' aspects, is an echo of the verse of the Wisdom of Solomon where he speaks of having been taught 'the structure of the world and the activity of the letter-elements' (σύστασιν κόσμου καὶ ἐνέργειαν στοιχείων, 7:17). The key to his character is that magic, i.e. the science of spells (and spelling) is architecture *in limine*, or *barzakh* architecture. In a later passage in the same book, we read how 'Wisdom, the artisan of all things, taught me' (ἡ γὰρ πάντων τεχνῖτις ἐδίδαξέν με σοφία, 7:21).

B. Starting Point and Influences

It would be left to esoteric philosophers and to mystical authors to penetrate the structure of that mythical bird language, and to elaborate and draw upon the symbolism of the alphabet and the letters in particular. As tends to be the case with the applied 'subtle' sciences, the 'initiatic arts' often bundled under the labels of 'the occult' or 'esoterica', the applications of *ʿilm al-ḥurūf*, the 'science of the letters', always attracted most of the public attention, and have equally continued to attract most scholarly studies, prompting facile, and sometimes outright dismissive reductions of their nature to 'divinatory practices', to 'magic' or 'pseudo-sciences'. The picture is clearer, however, and more relevant to the Islamic worldview, when it is understood that 'occult beliefs and practices are inextricably embedded in philosophical, scientific, and religious discourses,'[24] and when the science of letters is thus understood as one of the natural developments of the language cosmogony mentioned above,

---

[23] See P. A. Torijano, *Solomon, the Esoteric King: From King to Magus, Development of a Tradition*, Supplements to the Journal for the Study of Judaism 73 (Leiden, Boston, Köln: Brill, 2002), 92–3, and J. Janssens, 'The Ikhwān aṣ-Ṣafā' on King-Prophet Solomon', in *The Figure of Solomon in Jewish, Christian and Islamic Tradition: King, Sage and Architect*, Themes in Biblical Narrative: Jewish and Christian Traditions 16 (Brill, 2012), 241ff. for references to Solomon's position in the prophetology of the Ikhwān al-Ṣafā'.

[24] L. Saif, 'From *Ġāyat al-ḥakīm* to *Šams al-maʿārif*: Ways of Knowing and Paths of Power in Medieval Islam', *Arabica* 64, nos. 3-4 (2017): 297.

and its applications revealed as instrumental in relation to the doctrine. The occult sciences, in spite of their proneness to degeneration into superstition, are 'repositories of cosmological principles',[25] and the symbolism of the letters is one of these which finds macrocosmic and microcosmic applications through different disciplines.[26] This is why the science of the letter-numbers can be called 'the place and language that are common to metaphysics, cosmogony, and cosmology, as well as to the initiatory path.'[27]

As is the case with Greek alphanumeric cosmology, the elaborations on the Arabic letter-numbers, be they scientific, theological or magical, are based on the perceived intrinsic nature of the letters themselves and on the nature and structure of the alphabet which comprises them (and which they constitute). The point of departure of *ʿilm al-ḥurūf* is that the letters themselves are bearers of a knowledge that is revealed to men through the messengers and prophets.

As with the Greek letters, we may try to glean some initial knowledge about the letters from those scholars who study language, namely the grammarians. It turns out, however, that there is no reliable Arabic grammatical literature prior to the Qur'ānic revelation, and the greatest authority for the earliest and most authoritative grammarians, in their struggle to preserve the perceived purity of Old Arabic (*al-lugha al-ʿarabiyya al-qadīma al-jayyida*),[28] was that of Bedouin speech and poetry.[29] More crucially, the description of the alphabet as we know

---

[25] S. H. Nasr, *Islamic Science: An Illustrated Study* (London: World of Islam Festival, 1976), 207.

[26] For a very useful and comprehensive summary, see G. Böwering, 'Sulamī's Treatise on the Science of the Letters', in *In the Shadow of Arabic: The Centrality of Language to Arabic Culture*, ed. B. Orfali (Leiden: Brill, 2011), 341–42.

[27] D. Gril, 'The Science of Letters', in *Ibn al-Arabi, The Meccan Revelations, volume II*, ed. M. Chodkiewicz (New York: Pir Press, 2004), 112–13.

[28] Sībawayh, *Al-Kitāb*, 4 vols. (Cairo: Maktaba al-Khanjī, 1982), 4.473.

[29] Cf. F. Corriente, 'From Old Arabic to Classical Arabic Through the Pre-Islamic Koine: Some Notes on the Native Grammarians' Sources, Attitudes and Goals', *Journal of Semitic Studies* 21, nos. 1-2 (1976): 62–68. For details concerning the earliest inscriptions in Hismaic, Safaitic, Dadanitic, Nabataean and even Greek scripts, see A. Al-Jallad, 'The Earliest Stages of Arabic and its Linguistic Classification', chap. 16 in *The Routledge Handbook of Arabic Linguistics* (Routledge, 2017), 315–16, among a plethora of highly recommended recent articles by this author.

it dates to the times of al-Khalīl ibn Aḥmad al-Farāhīdī (often called simply 'al-Khalīl', 718–786), considered the first Arabic lexicographer, and his disciple Sībawayh (c. 760–796), author of the first extant Arabic grammar. This means that the earliest codification of the basic letter correspondences, from a grammatical point of view, cannot really be separated from the influence of Islamic revelation. As a matter of fact, it was not only the Bedouins' Arabic which would be considered the highest standard on language questions, but more specifically the Hijazi dialect of Quraysh, because it was in that particular form of Arabic that the Prophet Muḥammad had received the revelations.

There has been a long scholarly debate over Greek and Syriac influences on the development of Arabic grammar, and quite specifically over the extent of the influence of the *Techne* of Dionysius Thrax on some of the features of Arabic grammar.[30] While there remain some yet unsolved issues, it appears clear now that the Greek influence would have been mediated by Syriac authors, not only grammarians but also philosophers, who would have undertaken the major task of adapting the grammar and the logical structures of an Indo-European language to those of a Semitic one;[31] the detailed study of this process of adaptation is in its early stages and exceeds the boundaries of this research. What I intend to do in the following pages is to trace the development of Islamic letter cosmology by examining selected passages taken from a wide range of sources, but there are at least two main points which should be retained about the origin of Arabic grammar:

– grammatical reflection developed 'at the same time (eighth century), in the same place (Mesopotamia), in three different languages (Syriac, Arabic, and Hebrew).'[32]

– grammar developed as an ancillary discipline in relation to Qur'ānic sciences, not unlike the other grammatical traditions developed in the wake of a scriptural corpus.[33]

---

[30] See King, 'Elements of the Syriac Grammatical Tradition', 201–206.

[31] See G. Bohas, 'Le traitement de la conjugaison du syriaque chez Bar Zo'bî : une langue sémitique dans le miroir de la grammaire grecque', *Parole de l'Orient* 40 (2015): 18–19.

[32] King, 'Elements of the Syriac Grammatical Tradition', 204.

[33] Cf. W. J. van Bekkum et al., *The Emergence of Semantics in Four Linguistic Traditions: Hebrew, Sanskrit, Greek, Arabic*, Amsterdam Studies in the Theory and History

I. The Arabic Alphabet Order

The Arabic alphabet as we know it today (*alif, bā', tā', thā'*...), and as used in practically every dictionary, follows a shape-oriented sequence introduced during the first century of the Hegira.[34] It is called *ḥurūf al-hijā'* or *ḥurūf al-tahjī*, 'the letters of spelling',[35] and it is formed by 28 or 29 consonants and semi-consonants.

Another curious and very common designation for the alphabet is *ḥurūf al-muʿjam*, which means literally 'letters of confusion', from a triliteral root *ʿ-j-m*[36] which parallels closely, from the Arab point of view, the meaning of Greek βάρβαρος as 'non-Greek-speaking', foreigner. *ʿAlā ḥurūf al-muʿjam* meant simply 'in alphabetical order',[37] but Arab lexicographers were at pains over the centuries to explain the expression,[38] and two distinct traits of the alphabet can be retained from their attempts: 1) that there was some perceived foreignness to the alphabet, and 2) that the letters, when unconnected and not forming words, were conspicuously meaningless, as foreign bodies. The word *ʿujma*, from the same root *ʿ-j-m*, refers to the diacritic dots which distinguish, for example, between ص and ض, a distinction compared to the irruption of light at dawn. The elaborations of the grammarians and lexicographers on the different qualities of the letters, their degrees, their nature and properties, including their astronomical associations and their correspondences with the four elements and the elementary qualities, are clear reminders of this same mixture of grammar and cosmology found in the corpus of Greek grammarians; a notable example is furnished by the introductory pages

---

of Linguistic Science 82 (Amsterdam/Philadelphia: John Benjamins Publishing, 1997), 285–96.

[34] A. Al-Nāṣṣir, 'Sibawayh the Phonologist: A Critical Study of the Phonetic and Phonological Theory of Sibawayh as Presented in his Treatise *Al Kitāb*' (PhD diss., University of York, 1985), 25–6.

[35] Cf. Lisān 4627c s.v. *h-j-a*: *al-hijā' taqṭīʿ al-lafẓah bi-ḥurūfihā*, '*al-hijā'* is the cutting of a word in its letters.'

[36] *Muʿjam* is a *maṣdar mīmī* of *ʿajama*, that is, a '*mīm* infinitive' used customarily as a kind of aorist, i.e. to express action abstracted from duration.

[37] Cf. Bukhārī 64:13.

[38] Cf., *s.v. ʿ-j-m*, Ibn Manẓūr, *Lisān al-ʿarab*, 15 vols. (Qum, Iran, 1405 AH), 12.387a; G. Freytag, *Lexicon Arabico-Latinum*, 4 vols. (Berlin: C.A. Schwetschke & Son, 1837), 3.116; Samīn, *ʿUmdat al-ḥuffāz*, 3.33–4.

of *Lisān al-ʿarab*, the preeminent dictionary of the language, which starts with a chapter 'On the Disjointed (*muqaṭṭaʿa*) Letters,' followed by 'On the Names, Natures and Properties of Letters.'[39] The sense of foreignness ascribed to the letters when in isolation also brings to mind the Greek grammarians' insistence on the fact of the indeclinability of the names of the letters, and on the lack of meaning of the originally Phoenician names of the letters.[40]

There was also an original letter sequence inherited, with minor regional variations, from the Phoenician alphabet, a sequence shared with the Aramaic, Hebrew and Greek alphabets, starting *alif, bā', jīm, dāl*, and known as *abjad*, *ḥurūf al-abjadiyya* ('letters of the *abjad*'), or even personified as 'Abū Jād'.[41] In fact, and strictly speaking, *abjad* means 'the first of the words in which are grouped the letters of the Arabic alphabet.'[42] The *abjad* is customarily grouped in eight subsets of letters for ease of memorisation, and like its Semitic relatives it lends itself from early times to the representation of numeric values,[43] to the point that *abjad* will often simply mean 'the letters in their numeric values.' The eight mnemonic sets of this arrangement, namely, *abjad, hawwaz, ḥuṭaya, kalamun, saʿfaṣ, qarashat, thakhadha, ḍaẓagha*,[44] or more often only the first six – thus corresponding to the twenty-two letters of Hebrew – are traditionally matched to the Kings of Madyan (the biblical Midian), 'whose names were laid upon the number of letters of the Arabic writing,' or to some devils, or to 'sons of Persia',[45] who invaded the Hijaz like the rays of the sun.[46]

---

[39] Ibn Manẓūr, *Lisān al-ʿarab*, 1.10–16.

[40] See above, p. 18.

[41] '*Ka-ṣighat al-kunya*', 'in the form of a surname', see M. al-Zabīdī, *Tāj al-ʿarūs min jawāhir al-qāmūs*, ed. A. Hārūn, 40 vols. (Kuwait: Ministry of Guidance / Information, 1994), 7.401ff (hereafter cited as Tāj).

[42] *Munjid*, 1.

[43] Cf. Chrisomalis, *Numerical Notation*, 134ff.

[44] The vocalisation can vary. The 'Western' variant of this arrangement, where five letters occupy different positions, is laid out clearly in C. Bonmariage and S. Moureau, *Le Cercle des lettres de l'alphabet (*Dā'irat al-aḥruf al-abjadiyya*)* (Leiden: Brill, 2016), 11.

[45] M. al-Fīrūzābādī, *al-Qāmūs al-muḥīṭ* (Beirut: Mu'assasa al-risāla, 1998), 266.

[46] Tāj, 7.401a.

1. The Arabic Letters as Numerals

The evidence for the earliest uses of the Arabic letters as numbers is currently under scholarly scrutiny, with conclusive evidence found only for as late as the tenth century, but it is generally accepted that, as in the case of Hebrew and Syriac, the influence of the Greek alphanumeric system was decisive,[47] and it is known from alchemical literature, as I shall explain below, that some form of alphanumeric notation was already in use from at least as early as the eighth century.

The *abjad* sequence serves as the practical basis of Arabic isopsephy, *ḥisāb al-abjadiyya* or *ḥisāb al-jummal*, 'the reckoning of the total',[48] which, depending on the authors and the periods, has been more or less identified to related forms of onomatomancy like *jafr* (sometimes *jafr jāmiʿ*, often simply identified to *ʿilm al-ḥurūf*),[49] *sīmiyā'* (letter magic), *zā'iraja* (art of the diviner's board or geomantic compass),[50] and the elusive *ḥisāb al-nīm* (used to predict winners and losers).[51] In spite of all this alphanumeric flourishing, however, and rather unlike the case with Greek and Hebrew scripts, the arithmetical use of the letters was only conceived as an addition to the writing system which was already functional as a phonographic device.

---

[47] See J. Thomann, 'The Two Arabic Abjad Numeral Systems: Scientific Innovation and Archaic Tradition', pre-publication:7–10. I am very grateful to Johannes Thomann for kindly sharing this still unpublished article.

[48] Although *jummal* has been also thought to be a foreign term, see Ibn Manẓūr, *Lisān al-ʿarab*, 11.128a, Lane, *s.v. j-m-l*, and especially Thomann, 'The Two Arabic Abjad Numeral Systems', 5.

[49] *Munjid*, 94b. Confusion and lack of clarity seem to have surrounded for centuries the definition of *jafr* – cf. M. Ebstein, *Mysticism and Philosophy in al-Andalus* (Leiden: Brill, 2014), 121; S. Nizamuddin Ahmad calls it 'the science of the symbolism of Arabic letters in their ideophonic, ideographic and arithmological dimensions'; the *EI2* article by T. Fahd has valuable references, but for an overall perspective see M. S. Melvin-Koushki, 'The Quest for a Universal Science: The Occult Philosophy of Ṣā'in al-Dīn Turka Iṣfahānī (1369–1432) and Intellectual Millenarianism in Early Timurid Iran' (PhD diss., Yale University, 2012), 285.

[50] A. Ibn Khaldūn, *Muqaddima*, ed. A. A. M. al-Darwīsh, 2 vols. (Damascus: Dār Yaʿrib, 2004), 1.233–4.

[51] See *ibid.*, 231–233. For a Greek Pythagorean precedent of this technique, see P. Tannery, 'Les chiffres arabes dans les manuscrits grecs', *Revue Archéologique* 7 (1886): 248ff.

From a more theoretical point of view, it is interesting to note how the Qur'ān is doctrinally at the foundation of the letter-number concurrence through the divine attributes and actions. Among the famous enumeration of the ninety-nine *asmā Allāh al-ḥusnā*, the 'beautiful names of God,'[52] we find *al-Muḥṣī*, the Calculator, He Who Counts, and *al-Ḥasīb*, the Reckoner, and the roots of these names, *ḥ-ṣ-y* and *ḥ-s-b*, appear repeatedly in the Qur'ān describing God's qualities. In addition to these two usual divine names, some of the divine actions involve other forms of counting and writing. The root for 'number', *ʿadad*, for example, occurs in the interesting combination, *wa-aḥṣā kulla shay'in ʿadadan*, 'he calculates the number of all things' (72:28),[53] and in *aḥṣāhum wa-ʿaddahum ʿaddan*, 'He has calculated and counted their number exactly' (19:94). *Ḥasaba* is more related to the process of thought in general, with its cognates sometimes translated as ratio, measure or reason.[54]

Similarly, some of the divine actions or the Qur'ānic images establish a very direct relation to writing. Because God is said to 'have prescribed [written] mercy upon Himself', *kataba ʿalā nafsihi al-raḥma*, some have argued that *al-Kātib*, the Scribe, or the Writer, can also be considered a divine name.[55] This is repeatedly confirmed by mentions of the Qur'ān itself as a *kitāb*,[56] and references to books, or writings or records of divine origin are recurrent in the Qur'ān in the form of the following roots:

– *raqama* – In 83:20, the seventh heaven named ʿIlliyūn is identified with, or said to contain, a *kitābun marqūm*, a 'numbered book', a 'ruled notebook', practically a ledger for the deeds of the righteous, with its counterpart in the wretched *kitābun marqūm* of Sijjīn, the seventh and lowest of earths (83:7). *Tarqīm* means 'to add diacritics (*taʿjīm*) to something written (*kitāb*) in order to make it clear,' and a *kitāb* is *marqūm* when 'its letters have been made clear by their respective vocalisation

---

[52] The source is a well-known hadith reported by Abū Hurayra, *Sunan Ibn Mājah* 3861; *Jāmiʿ al-Tirmidhī* 3507.

[53] *Ḥaṣāh* means pebble, thus making with *ḥaṣā* a perfect analogue to the Latin pair *calculus/calculare*. From the root *ʿ-d* we obtain also *miʿdād*, abacus.

[54] Cf. Freytag, *Lexicon*, 1.378.

[55] See M. Ibn al-Wazīr, *Īthār al-ḥaqq ʿalā al-khalq*, 2 vols. (Riyadh: Dār al-ṣumayʿī, 2016), 106–108 for a thorough application of this reasoning and a very extended list of beautiful names.

[56] E.g. 2:2, 18:1 and *passim*.

signs (*ʿalāmāt al-tanqīṭ*).' Not only are the roots of *muʿjam* and *nuqṭ* found in these definitions, but furthermore, *raqama* is used for sealing and stamping, and *raqm* means a numeral.[57] I hardly need to point out how various aspects of my object of research are found together in this root, to which we shall have occasion to return in later pages.

– *saṭara* – The aspect of a grid-like or ruled pattern occurs also elsewhere with the root of *saṭara*: future eschatological events are 'traced (or outlined) in the Book' *fī al-kitābin masṭūran* (17:58), and the Book itself is called *masṭūr* (e.g. 52:2), 'drawn in rows', like rows of trees,[58] or simply 'ruled', like lined paper. One of the most quoted oaths in the Qur'ān is 'by the pen and what they delineate (*yasṭurūn*)'; the most common explanation to this is that the angels – who incidentally are said to stand in rows (*ṣaffāt*, 37:1) – do their writing in lines (*ṣaff*).[59]

– *madda* – The image of the ink, which I have mentioned above, turns out to be especially interesting due to an ulterior semantic development. In the Qur'ān, the root of *madda* tends to denote the extension, a spatial or temporal prolongation, as of the earth spread out (13:3, 84:3), or of the life span (19:75), or the ink (*midād*), with the basic idea of continuity, as if pulling a string, and also, in some contexts quite inextricably, with the sense of providing help and assistance. We have in this metaphor a complement to the idea of discrete quantity represented by the numerical terms above. In fact, if we unfold the image of the ink, we can see how both aspects of number coalesce in it – as in the Nicomachean distinction between *multitudo* and *magnitudo*, discrete and continuous quantity – when the divine writer determines the unlimited extension of the ink with the shapes of the letters (*ḥurūf*), and he does this by creating edges (*ḥiraf*).[60] In view of this, it is quite remarkable how in later philosophical developments, although both Hebrew and Arabic made use of adapted forms of the Greek ὕλη (Lat. *materia*) to name the formless substratum of the world,[61] both languages also produced native terms which acted

---

[57] *Arqām al-hindiyya* are the 'Indian' – for us 'Arabic' – numerals. See Ibn Manẓūr, *Lisān al-ʿarab*, 12.248ff.

[58] *Ibid.*, 2007a.

[59] Cf. above, Chapter 1, p. 23.

[60] Both *ḥurūf* and *ḥiraf* are plurals of the same singular, *ḥarf*. Cf. the similar meaning of the Lat. *apices* to denote the letters.

[61] הַיּוּלִי *hayule* and هيولى *hayūlā*.

mostly as synonyms of the former, namely Heb. *ḥomer*, 'mud, clay', and the one that brought us here, Ar. *mādda*, explained by lexicographers as a 'continuous increase' (*ziyāda muttaṣila*).

Later exegesis would explain how the words of God, being continuous with him (*muttaṣila bihi*), 'assist him in the manner of ink' (*yumidduhu*) in his overflowing abundance.[62] This makes it easy to see how the divine words, perhaps specifically in their written manifestation, came to be considered as a sort of prime matter (*al-mādda al-ūlā*).[63]

– *ratila* – Finally, an echo of the same discrete deployment of the divine word mentioned above is found in the terms related to *ratila*, 'to be regular and well-ordered', 'like healthy teeth', and which occur solely when speaking of the delivery of the revealed verses. In 25:32, where the subject of the verb is God (*rattalnāhu tartīlan*), 'We gave it to you in gradual revelation', with the meaning of a distinct delivery (*bayyinan*), of a 'harmony and arrangement in proper disposition' (*ittisāq wa-intiẓām ʿalā istiqāma*).[64] In 73:4, man is ordered to recite in the same clear and ordered way: *rattili'l-qur'āna tartīlan*, 'recite the Qur'ān rhythmically and spelling it out distinctly,'[65] or to put it simply, 'with *tartīl*', which is the name of the art of Qur'ānic recitation.

I shall have more to say about some of the above aspects when studying later developments in Islamic thought, but for the time being it is sufficiently clear that the Qur'ān already contains a rich kernel of alphanumeric symbolism. In the following paragraphs I will attempt to trace the unfolding or the branching out of this scriptural kernel into the various manifestations of the science of 'letters'.

---

[62] See Ebstein, *Mysticism and Philosophy*, 48–9, 113, 153, based mostly on the Ikhwān al-Ṣafā'.

[63] See S. Brentjes, 'An Exciting New Arabic Version of Euclid's Elements: MS Mumbai, MULLĀ FĪRŪZ RI 6', *Revue d'histoire des mathématiques* 12, no. 2 (2006): 187 for a reference to the other terms used to translate ὕλη.

[64] Samīn, *ʿUmdat al-ḥuffāẓ*, 2.70.

[65] Al-Ghazālī explains '*ḥarfan ḥarfan*', 'letter by letter', see A. al-Ghazālī, *Kitāb al-arbaʿīn fī uṣūl al-dīn* (Beirut: Dār al-kutub al-ʿilmiyya, 1988), 28.

C. The Development of the Science of Letters

I. ʿAlī: The Common Source

The 'knowledge of the letters' (*ʿilm al-ḥurūf*) started developing in various directions from the time of the Companions of the Prophet, and eventually it branched into at least two lines of study which exhibit various doctrinal refinements and applications. Looking at the Ḥadith literature, it is quite remarkable how the knowledge of the letters seems to have been initially a preserve of the Shīʿa traditions.[66] This means, concretely speaking, that the traditional wellspring of letter speculation is the person of ʿAlī ibn Abī Ṭālib, cousin, son-in-law and one of the scribes of Muhammad, whose supporters (*shīʿat ʿAlī*, the followers of ʿAlī) accorded him not only the greatest importance as the prolonger of the Prophet's blood-line (*ahl al-bayt*, the 'people of the house'), but also an exalted spiritual authority of his own. Imām ʿAlī is not only the first *khalīfa* or successor of the Prophet recognised by the Shīʿa, but he is also one of the four 'rightly guided caliphs' recognised by the Sunnite and other smaller Islamic denominations like the Ibadis. He is directly or indirectly one of the major sources, if not the main source of most Shīʿa hadith literature, and he is also a major transmitter of Sunni hadiths,[67] in many of which his special nature and relation to the Prophet is unquestionably transmitted. A well known tradition from the Prophet states 'I am the abode of wisdom (or "the city of knowledge") and ʿAlī is its gate,' *anā dār al-ḥikma wa-ʿAlī bābuhā*.[68] No other of the companions of the Prophet has any comparable authority straddling – and indeed bridging – the Sunni-Shīʿa division.[69] It is worth remembering not only that Imām ʿAlī is considered the indisputable source of all initiatic sciences, but also that with the exception of one, all Sufi orders count him as the first link of their lineages immediately after

---

[66] Cf. P. Lory, 'La science des lettres en terre d'Islam: le chiffre, la lettre, l'oeuvre', in *La contemplation comme action nécessaire*, Cahiers de l'Université Saint Jean de Jérusalem 11 (Berg International Éditeurs, 1985), 91.

[67] M. Z. Siddiqi, *Ḥadīth Literature: Its Origin, Development and Special Features* (Cambridge: Islamic Texts Society, 1993), 18.

[68] Tirmidhī 4089; variations in al-Ḥākim al-Nīshābūrī and Ibn ʿAbd al-Barr.

[69] R. Shah-Kazemi, *Justice and Remembrance: Introducing the Spirituality of Imam ʿAlī* (London & New York: I.B. Tauris / The Institute of Ismaili Studies, 2007), 12ff.

the Prophet.[70] The figure of Imām ʿAlī thus stands in Islamic history as a unique point of intersection between *tashayyuʿ*, the adherence to the Shīʿa, *tasannun*, following the Sunna, and *taṣawwuf*, the way of Sufism, or Sunni esotericism.

And it is this figure, admittedly a composite of many elements of varying degrees of historicity, that stands at the origin of the sciences of language and the letters. ʿAlī is acknowledged as the first authority of Arabic grammatical tradition,[71] as the one who directly instructed Abū al-Aswad al-Du'alī (ca. 603–689), who first put grammar in writing (*awwalu man waḍaʿa al-naḥw*);[72] and he is also at the origin of Arabic calligraphy in its outward and inner aspects.[73] 'The Messenger of God made ʿAlī learn a thousand letters (*alf ḥarf*), each one of which opens a thousand more.'[74]

II. Letters in the Ḥadīth Literature

As mentioned earlier, references to alphanumeric symbolism are notably absent from the major Sunni Hadith collections. A detailed search through the *Kutub al-sitta*, 'The Six Books' which form the most accepted canon, with the addition of *Musnad Aḥmad* and other collections like the *Riyāḍ al-ṣāliḥīn*, have yielded the following results.[75]

– *Ḥarf* is used in the Sunni Hadith literature mostly in its meaning of 'reading variation', one of the seven canonical *aḥruf* or 'modes'

---

[70] L. Lewisohn, 'Ali ibn Abi Talib's Ethics of Mercy in the Mirror of the Persian Sufi Tradition', in *The Sacred Foundations of Justice in Islam: The Teachings of ʿAlī ibn Abī Ṭālib*, ed. M. Lakhani (Bloomington: World Wisdom, Inc, 2006), 112ff.

[71] See Al-Nāṣṣir, 'Sibawayh the Phonologist', 5.

[72] Al-Du'alī is credited with the invention of the first Arabic diacritics, but no work by him has been preserved. Thus, although acknowledged as the first grammarian of Arabic, the first grammar we have access to is that of Sībawayh.

[73] H. Corbin, *Histoire de la philosophie islamique*, 2 vols. (Paris: Gallimard, 1986), I, 205.

[74] M. al-Kulaynī, *al-Kāfī*, 15 vols. (Qum: Markaz Buḥūth Dār al-Ḥadīth, 1430 [2008/2009]), II, 30 (770).

[75] Digital concordances and indices now made available online allow for recursive searches both in Arabic and English translation. I have relied mostly on *Mawsūʿa al-ḥadīth al-sharīf (Encyclopaedia of Hadith)*, 18 vols. (Vaduz: Thesaurus Islamicus Foundation, 2000) (hereafter cited as EH), the bilingual collection at sunnah.com, and A. J. Wensinck, *A Handbook of Early Muhammadan Tradition* (Leiden: Brill, 1927). I follow the Arabic EH numbering throughout.

of Qur'ānic recitation, and occasionally to refer to any variation as a preference in a way of acting.

– References to the divine Pen, *al-qalam*, are perhaps the clearest connections to the written word cosmogony. In most cases the Pen is mentioned as recorder of human destiny, in the fatidic expressions 'the Pen has dried' (*jaffa al-qalam*) or 'the Pen has been lifted' (*rufiʿa al-qalam*),[76] but a clearer cosmogonic occurrence speaks of it as 'the first created being, to whom God said, "Write!" and so it flowed endlessly with every existant,' أوّل ما خلق الله القلم فقال له اكْتب فجرى بما هو كائن إلى الأبد;[77] in other wordings, there is the significant difference that what is written by the Pen is not the existence itself, but destiny, *al-qadar*.[78] In the same hadith there is question of the 'mother of the book' (*umm al-kitāb*), explained as *kitābun katabahu Allāh qabla an yakhluqa al-samawāt*, 'a book (writing) He wrote before creating the heavens.' In other narrations, *umm al-kitāb* refers to the *Fātiḥa*, the first sura of the Qur'ān and main obligatory part of the canonical prayer.

– Most uses of *kataba* and cognates, aside from *kitāb* to refer to the Qur'ān, have to do either with predestination, with ritual prescriptions, or with the divine recording of good and bad deeds; indeed, the 'recording angels' assigned to every person are called 'the scribes', *al-kuttāb*.[79] One cosmological example in *Ṣaḥīḥ Muslim*[80] shows the direct relation between the doctrine of predestination and the divine reckoning and writing: كتب الله مقادير الخلائق قبل أن يخلق السّموات والأرض 'God wrote (*kataba*) the measures (*maqādīr*, related to *qadar*, predestination) of created beings before creating the heavens and the earth.' In one variation of the above referred tradition, when the Pen is created, it is charged with writing specifically the same *maqādīr*, the 'measures'.[81] This semantic field which combines fate with measuring, and with the notion of power and control intrinsic to this root, is represented by three of the most common divine names, *al-Qadīr*, *al-Qādir*, and *al-Muqtadir*, which express with differing

---

[76] E.g. *Sunan Abī Dāwūd* 4398.

[77] Tirmidhī 3637

[78] Tirmidhī 2308.

[79] *Muwaṭṭa' Mālik* 1822.

[80] Hadith 6919.

[81] *Sunan Abī Dāwūd* 4702.

degrees of emphasis the various aspects of determination.[82] Among the traditional definitions of *miqdār* is found simply *mawt*, 'death', for 'when the servant reaches the term, he dies.'[83]

– Number and counting: although the important Qur'ānic image of the ink is far from prominent in the Hadith, we find in Tirmidhī and other collections the following litany, given when the Prophet instructs a woman who was counting the praises 'with pebbles':[84] *subḥāna Allāh ʿadada khalqihi […] subḥāna Allāh midāda kalimātihi* 'Glory to God according to the number of His creation […] Glory to God according to the extension of His Words' or 'according to the ink of His words.'[85]

I have little doubt that more in-depth examination of the Hadith literature would yield more such internal correspondences, which are most often based on the structure of the Arabic language, hence all too easy to be lost in translation, while at the same time inseparable from any traditional Arabic exegesis, even when the correspondences are not brought to light explicitly. What I have tried to show in the previous paragraphs is, primarily, that what underlies the exegetical principle of *al-Qur'ān yufassiru baʿduhu baʿdan* (different parts of the Qur'ān explain one another), is extensible to the wider corpus of Sunni Islamic traditional sciences, which is based on a strict exegetical hierarchy.[86] After the Qur'ān, the second source is the Sunnah, the Hadith of the Prophet, which includes the often overlooked commentaries on the Hadith,[87] and only later the *tafsīr* (exegetical commentary) literature, which in some cases actually includes commentary on both the Qur'ān and the Hadith.

---

[82] One is reminded of the Greek triple personification of the Fates: Clotho, Lachesis and Atropos – the spinner, the measurer and the decider.

[83] Ibn Manẓūr, *Lisān al-ʿarab*, 5.79a.

[84] That is, she was 'calculating' her prayers; Abū Dāwūd 1502.

[85] Tirmidhī 3903, al-Nasā'ī 1360, Muslim 7089.

[86] See A. Habil, 'Traditional Esoteric Commentaries on the Qur'an', in *Islamic Spirituality: Foundations*, ed. S. H. Nasr (London & New York: Routledge, 1989), 91–97.

[87] 'These commentaries find in the *Ḥadīth*, in addition to direct interpretations of Quranic verses, the very principles of symbolism found in the Quran and applied in later Quranic commentaries,' *ibid.*, 94. See Abdal Hakim Murad, *Selections from the* Fatḥ al-Bārī *by Ibn Ḥajar al-ʿAsqalānī* (Bartlow, Cambridge: Muslim Academic Trust, 2000), 1, for a brief introduction to the genre.

At the junction between the Sunni and Shīʿī exegetical traditions we find, in addition to ʿAlī, a few other personalities who seem to be of special relevance in the transmission of the esotericism of language: ʿAbd Allāh ibn ʿAbbās, ʿAbd Allāh ibn Masʿūd, and most notably, through a direct line from ʿAlī through his son al-Ḥusayn, the towering figure of Jaʿfar al-Ṣādiq (d. 765).[88] Jaʿfar, the sixth Shīʿī Imam, is also, through his mother's lineage, a descendant of the caliph Abū Bakr al-Ṣiddīq, thus uniting, like ʿAlī, the two main lines of Prophetic succession. He is also a prominent link in most Sufi initiatic chains (*salāsil*), and a source *par excellence* of Islamic occult sciences.[89] I shall have occasion to mention him again when discussing the origin of Islamic alchemy.

III. The Two Branches

The two major lines of study of the Islamic 'science of letters' refer respectively to ① the symbolism of the alphabet and ② to the symbolism of a subset of fourteen letters known as the *muqaṭṭaʿāt* or 'cut-off', 'isolated' letters, found at the beginning of twenty-nine Qur'ānic suras, alone or in unsemantic combinations of up to five letters. Some suras derive their names from these opening letters, like *Qāf* (50), or *Ṭā Hā* (20) and *Yā Sīn* (36) which have even become personal names.[90]

Two complementary Shīʿī hadiths illustrate and sanction these two main branches of letter speculation:

'God Most High has a choicest part (*ṣafwa*) in every book, and the choicest part of this book are the letters of the alphabet (*ḥurūf al-tahajjī*).'[91]

'God Most High has a secret (*sirr*) in every book, and his secret in the Qur'ān is in the isolated initial letters of the suras (*awā'il al-suwar*).'[92]

---

[88] See M. A. Amir-Moezzi, *The Divine Guide in Early Shi'ism: The Sources of Esotericism in Islam*, trans. D. Streight (Albany, NY: SUNY Press, 1994), 64; Habil, 'Traditional Esoteric Commentaries on the Qur'an', 95–96.

[89] Ibn Khallikān, *Wafayāt al-aʿyān wa-anbā' abnā' al-zamān*, 8 vols. (Beirut: Dār Ṣādir, 1972), 327; M. Hodgson, 'Jaʿfar al-Ṣādik', *Encyclopaedia of Islam, Second Edition* (consulted online on 8 January 2018).

[90] They are also called *awā'il* and *fawātiḥ al-suwar*, the 'first ones' or 'the openers' of the suras. A succinct and well rounded characterisation is found in P. Garrido Clemente, 'Ibn Masarra a través de las fuentes: obras halladas y escritos desconocidos', *Estudios Humanísticos. Filología*, no. 31 (2009): 95–6.

[91] *Biḥar al-anwār*, vol. 88, p. 9, cited in Mir-Kasimov, *Words of Power*, 469.

[92] *Ibid.*

Leaving aside the possible implications of the distinction between *ṣafwa* and *sirr*, which might prove too subtle for this context, we can observe that the first group, the 'spelling letters', resembles that comprehensive set of alphanumeric principles called in Greek the twenty-four στοιχεῖα. Because of their inclusiveness – they comprise all letters – and as I had had occasion to mention when speaking of the Gnostic concept of the pleroma,[93] they are primarily *cosmological*, that is related to the constitution of the universe as it stands – or as it stands in the divine blueprint – , formed by all the elements, and this is why they are related to wisdom, to the comprehension of reality.

On the other hand, the sub-set of fourteen might be compared to one of the alphabetic subsets we had encountered among the Greek grammarians, with the difference that this time what sets the fourteen letters apart is not a phonetic trait, but an inscrutable divine design. They are in fact, according to this design, and contrary to our grammatical assumptions, considered primordial and, as it were, the seeds which give origin to the remaining letters.[94] The isolated letters are thus primarily related to *cosmogony*, insofar as they are selected instruments used by the demiurgic God, and this explains why they are so important in magic and other related disciplines where their creative energy is brought into play. I will call this type of cosmogonic alphanumeric science 'restricted', in contrast to the full-alphabet 'comprehensive' alphanumeric science, which would be more properly cosmological. The 'restricted' alphanumeric speculation is often associated to the practical and magical properties of names and letters, and as such known as *ʿilm al-khawāṣṣ*, 'knowledge of the properties' – it is eminently an *applied* science. 'Comprehensive' speculation, on the other hand, is tied to the cosmological aspects of letters, divine names and divine scripture – it is a theoretical study.[95] It might be useful to introduce and employ in this context the rare distinction between *ʿulūm al-ḥarf*, the 'sciences of the letter', as the more metaphysical and

---

[93] See above p, 147.

[94] They are the 'root (*aṣl*) of all things'; P. Garrido Clemente, 'Edición crítica del *K. Jawāṣṣ al-ḥurūf* de Ibn Masarra', *al-Andalus Magreb* 14 (2007): 62.

[95] A similar distinction based on their function is not unknown to early authors such as Tustarī; see M. Ebstein and S. Sviri, 'The So-called *Risālat al-ḥurūf* (*Epistle on Letters*) Ascribed to Sahl al-Tustarī and Letter Mysticism in al-Andalus', *Journal Asiatique* 1, no. 299 (2011): 214–15.

cosmological, in contrast to the well known *ʿilm al-ḥurūf*, which could be then reserved for the applied science.[96]

In line with the object of this research, I shall refrain from studying in any detail the attributes and powers of particular groups of letters, in order to focus instead on the cosmological meaning of the alphanumeric system as a whole. Nonetheless, I must take note of the following dictionary definition of *muqaṭṭaʿāt*, which comes as close as possible to our elemental enquiry:

ومقطّعات الشيء طرائقه التي يتحلّل إليها ويتركّب عنها كمقطّعات الكلام ومقطّعات الشعْر ومقاطيعه ما تحلّل إليه وتركّب عنه من أجْزائه التي يسميها عروضيّو العرب الأسْباب والأوْتاد

The elements (*muqaṭṭaʿāt*)[97] of something are those modes (*ṭarāʾiq*) into which it decomposes and from which it is composed, like the elements of an utterance. The elements of poetry and its rhythmic divisions (*maqāṭīʿ*) are those parts (*ajzāʾ*) into which it decomposes and from which it is composed, and which the Arab prosodists call syllables and feet.[98]

This brief passage is remarkable for more than one reason: in the context of this work, the similarity with the definition of στοιχεῖον given by Aristotle is striking enough, but when we realise that the terminology used belongs to prosody and metrics as the most musical aspects of language,[99] then we cannot but be reminded of Balázs' theory about the meaning of στοιχεῖα,[100] and how he relates the term to metrics and prosody. There is also a clear parallel to the *Philebus* description of how the phonetic continuum was cut asunder by Thoth in order to produce the phonemes.[101] The word *ṭarāʾiq*, 'ways, pathways', agrees neatly with the etymology proposed by Balázs, whereby στοιχεῖον derives from στείχω, 'to walk', as if each of the elements is a pattern, as the tracks left on a path, which is not far at

---

[96] I am currently tracking the usage of *ʿulūm al-ḥarf*, which seems to go back to at least the fourteenth century, though not with the precise sense I am ascribing to it here.

[97] This translation implicitly relates to the definition of element as εἰς ἃ διαιρεῖται ἔσχατα, 'the ultimate divisibles', and is actually quite close to the concept underlying in ἄτομον, the atom, that ever-receding 'uncuttable'.

[98] Ibn Manẓūr, *Lisān al-ʿarab*, 8.279.

[99] Cf. A. Shiloah, 'The Origin of Language and its Link with Music according to the Theory of Jābir ibn Ḥayyān', *Al-Masāq* 21, no. 2 (2009): 159.

[100] Above, p. 10.

[101] See above p. 138.

all from the actual way of drawing letters on different media, and which brings us close once again to the term palaeographers use to describe the tracing pattern of a letter, the *ductus*, that is, the movement pattern of the writing instrument. Needless to say, the fact that these elementary letters are related to metrics and prosody has doctrinal implications regarding the cosmogonic role of poetry and song. In this regard, it must also be noted that the three *matres lectionis*, the semivowels *alif, wāw, yā* ('glides', in linguistic terminology) are called in the grammatical tradition *ḥurūf al-madd*, 'letters of extension',[102] with the same root of *midād*, the ink, and *mādda*, matter, as explained above. An alternative name is *ḥurūf al-ʿilal*, 'causal letters' or 'letters of affliction', because as in Greek grammar, words with 'accidents' are viewed as afflicted, ill, in opposition to 'healthy' words without accidents.[103]

Returning to our two branches, I should mention two other existing classifications or typologies of the Islamic 'science of letters':

1) For Denis Gril[104] there is one first aspect he characterizes as 'cosmological and Hellenic in origin', present especially in the Jābirian corpus and in the *Epistles* of Ikhwān al-Ṣafā'; and a second aspect 'metaphysical, spiritual, eschatological, inspired by the Qur'ān,' and 'represented by esoteric Shīʿism and *taṣawwuf*.'

2) Sara Sviri and Michael Ebstein propose,[105] after a comparative and analytical study, two types designated by Greek letters: 'the most familiar, type α', is found in orthodox Islamic literature and in classical Sufi texts, and it reflects a 'symbolic and etymological approach to the Arabic alphabet' and especially to the *fawātiḥ*,[106] while notably eschewing any conception of letters as building blocks of creation in cosmogonic and cosmological contexts. The second 'type β' reflects an approach which views language, and in particular letters, as the primordial building blocks

---

[102] See EALL, 2.308–10. *Al-madd iṭāla al-ṣawt*, '*al-madd* is an prolongation of the utterance.' The many symbolic associations of the Arabic *matres lectionis* are explored in J. Canteins, *Phonèmes et archétypes: contextes autour d'une structure trinitaire; AIU* (Paris: G.-P. Maisonneuve et Larose, 1972).

[103] See EALL, 2.309.

[104] Gril, 'The Science of Letters', 146; adopted in Melvin-Koushki, 'The Quest', see p. 171.

[105] Ebstein and Sviri, 'The So-called *Risālat al-ḥurūf*', 230–32.

[106] The 'openers of the suras'; see above 90.

of the cosmos. This type is found in the Shīʿī-Ismaʿili tradition and in Andalusian letter mysticism, for example in the writings of Ibn Masarra and Ibn ʿArabī.

The first typology is more historical, based on demarcation between two distinct doctrinal traditions: the Greek heritage and the original Islamic material. The second typology is more idiographic, based on the premise of a distinct duality within the Islamic tradition between 'orthodox Sunni and classical Sufi', and 'Shīʿī-Ismaʿili'.

Needless to say, both classifications have their usefulness, and this is not the place to examine their expedience in any detail. In any case, I shall not be making use of either of them, and I trust that the reader will have noted why I remain rather unconvinced of both accounts. Historically, the intricacy of the exchanges between the Greek heritage and simultaneous and subsequent traditions is simply too bewildering and opaque to allow for clear categorisations. Similarly, deciding to what extent we can consider the Islamic tradition a continuum or a clear-cut mosaic, and deciding where to set the boundaries between the different strands of Islamic esotericism is, without doubt, an uncertain task. Doctrinally, the key question, which I shall consider below, is the undecided and undecidable ontological status of matter, and therefore of the 'cosmic building blocks'. For ancient cosmologies such as the ones studied here, it is clear not only that there is continuity between language and phenomena, but that 'being is permeated by language, the primordial words coincident with the self-showing of things.'[107]

I must haste to add that I remain somewhat unconvinced by my own classification in 'two branches' posited above ('restricted' and 'comprehensive', or 'applied' *ʿilm al-ḥurūf* and 'theoretical' *ʿulūm al-ḥarf*), since a clear demarcation between the two types is elusive, full of overlaps, and may prove eventually cumbersome. Hence I shall try to continue presenting the relevant evidence in forensic fashion, and only occasionally sum up the findings rather than trying to draw too many conclusions.

---

[107] S. J. McGrath, cited in B. Kemple, *The Intersection of Semiotics and Phenomenology: Peirce and Heidegger in Dialogue*, vol. 20, Semiotics, Communication and Cognition (Berlin/Boston: Walter de Gruyter, 2019), 48.

IV. Some Key Texts

Adding to the verses and other passages cited above, and to give a more rounded perspective of the sources of Islamic alphanumeric esotericism before moving on to other sources not directly religious, I shall present in the following paragraphs a few key passages taken from hadith and *tafsīr* literature. As in previous chapters, I will add my own commentaries to bring out the relevance of the citations to the present enquiry.

1. Jawāmiʿ al-kalim

There are a number of hadiths[108] in which there is mention of the *jawāmiʿ al-kalim*, the 'comprehensive plenitude of expressions', as one of the Prophetic gifts. An oft-cited commentary introduces a reference to the nature of the letters,

> In the hadith 'I was given the comprehensive plenitude of expressions (*jawāmiʿ al-kalim*),' is meant the Noble Qur'ān, because God has comprehended in a small number of His words (*alfāẓ*) a multitude of meanings, so much so that it has been narrated: 'there is no letter of the Qur'ān which does not contain seventy-thousand meanings.'[109]

In relation to this inexhaustibility of each particular element, and while commenting on the 'verses of the ink' (Q. 18:111 and 31:28) much later in Islamic history, Mullā Ṣadrā Shīrāzī would add the following: 'And as His existential script (*kitābuhu takwīnī*) is endless, so His recorded script (*kitābuhu tadwīnī*), I mean the Noble Qur'ān, is also endless, because it is fashioned after its emitter (*qā'iluhu*).'[110] We can appreciate how he is speaking of the 'two Qur'āns' or the 'two books', the *kitāb takwīnī* or cosmic book and the *kitāb tadwīnī* or 'records' book, exactly along the lines of the 'two books' or the *duplex liber*, the *liber mundi* or *liber creaturarum* and the *liber sacrae doctrinae* of the European middle ages.[111]

---

[108] E.g. Bukhārī 7099; Muslim 1195; Tirmidhī 1640.

[109] F. al-Ṭurayḥī, *Majmaʿ al-baḥrayn*, 3 vols. (Qum: Mu'assasa al-Biʿthah, 1415 AH), 312, s.v. *j-m-ʿ*.

[110] Mullā Ṣadrā Shīrāzī, *al-Ḥikma al-mutaʿālīya fī al-asfār al-ʿaqlīya al-arbaʿa*, 6 vols. (Tehran: Ministry of Culture / Islamic Guidance, 1386 HS), 5.322.

[111] Cf. Curtius, *European Literature and the Latin Middle Ages*, 321; C. Bradatan, 'Berkeley and Liber Mundi', *Minerva* 3 (1999); G. Tanzella-Nitti, 'The Two Books Prior to the Scientific Revolution', *Perspectives on Science & Christian Faith* 57, no. 3 (2005):

In the thirteenth century, ʿAzīz al-Dīn al-Nasafī had also spoken of the *Qur'ān-i tadwīnī* and *Qur'ān-i takwīnī*,[112] but what is most important from our point of view is the 'endlessness' of the book. It is not based on the idea of incalculability, as if there were too many letters to be counted, but rather on the idea that every letter opens onto an innumerable quantity, hence constituting what has been called an 'intensive magnitude',[113] analogue to the 'density' of the real numbers, and most importantly, since we are looking into the physical/cosmological correspondences, clearly distinct from an atomistic understanding of matter.[114] This is a topic I shall have occasion to return to in later pages.

2. 'A limit and a summit'

The following tradition, found in slightly different forms in various sources,[115] is important as a source for the traditional multi-layered exegesis of the Qur'ān. I quote here the section, with minor comment, where it is shown how the multiple meanings depend partly on the nature of the letters.[116]

في ذكر القرآن لكلّ حرف منه حدّ ولكلّ حدّ مطّلع قيل معناه لكل حدّ مصْعد يصعد إليه يعني في معرفة علمه

'About the recitation (*dhikr*) of the Qur'ān: every one of its letters has a limit/terminus (*ḥadd*), and every limit has its place of ascent/departure point (*muṭṭalaʿ*).' The meaning of 'every limit' is a summit towards which one ascends, that is, in the experiential comprehension of its knowledge (*fī maʿrifat ʿilmihi*).[117]

235–48.

[112] See O. Safi, 'Qur'an of Nature: Cosmos as Divine Manifestation in Qur'an and Islamic Spirituality', *Religions*, no. 2012 (2012): 127.

[113] L. de Freitas, 'The Mathematical Continuum: A Haunting Problematic', *The Mathematics Enthusiast* 15, no. 1 (2018): 151.

[114] This is the 'synechist' position; see J. L. Bell, *The Continuous and the Infinitesimal in Mathematics and Philosophy* (Monza: Polimetrica, 2005), 57–9.

[115] References, which include Ṭabarī, Suyūṭī and Tustarī, in T. Mayer, 'Traditions of Esoteric and Sapiential Quranic Commentary', in *The Study Quran: A New Translation and Commentary*, ed. S. H. Nasr (Harper Collins, 2015), 1661.

[116] See *ibid.* for a comparison with the rabbinic *pardes* acrostic and the scholastic hermeneutical *quadriga*.

[117] A. al-Harawī, *Kitāb gharīb al-ḥadīth*, 6 vols. (Cairo: al-Maṭābiʿ al-Amīrīya, 1984). Cf. R. Todd, 'Qūnawī's Scriptural Hermeneutics', chap. 7 in *The Spirit and the Letter: Approaches to the Esoteric Interpretation of the Qur'an*, ed. A. Keeler, S. H. Rizvi and

The image of the 'mountain summit of a letter' is a striking one to convey the depth, in this case height (Lat. *altitudo*), of every element of the sacred text. It is easy to imagine the readers, when having access to the real knowledge (*maʿrifat ʿilmihi*) of the letters, as mountaineers walking along the summits of a vast range. This image of immensity expresses in a more graphic way the same 'endless' nature of each letter that we found in the previous passage.

3. 'Beyond utterance'

In *Al-Kāfī*, 'the Shīʿī Bukhārī', that is, the most authoritative of the Shīʿī hadith collections, is found the following,

خلق اسما بالحروف غير متصوّت وباللفظ غير منطق، وبالشخص غير مجسّد، والتشبيه غير موصوف، وباللون غير مصبوغ...

He created names with letters without uttering a sound (*mutaṣawwit*), and with a word without speaking (*munṭiq*),[118] with individuality without embodying (*mujassid*), with a similarity beyond qualities, with colour without hue… [119]

There is a rich textual tradition on the different kinds of divine names, at times strikingly similar to some passages of the Jewish *hekhalot* literature, with names of different lengths, cosmic attributes and functions. Some Muslim communities, small in numbers but large in doctrinal influence, like the Ismāʿīlīs and the Ghulat movements,[120] developed complex cosmological schemes based on these names in combination with Qur'ānic material, like the speculations based on the 'myth of *Kūnī-Qadar*'. This is based on the Qur'ānic cosmogonic imperative *kun* ('Be!') and the doctrine of *qadar* or predetermination, for 'God brought all things into existence by means of *kūnī*, and predetermined them by means of *qadar*' (*fa-bi-*

M. Nguyen (Oxford University Press, 2016), 308–309.

[118] I follow M. Māzandarānī, *Sharḥ Uṣūl al-Kāfī*, ed. A. ʿĀshūr, 12 vols. (Beirut: Dār Iḥyā' al-Turāth al-'Arabī, 2000), 3.285 for the syntax. As the foremost commentator of the most authoritative hadith collection, Māzandarānī is often considered the Shīʿa equivalent of al-ʿAsqalānī.

[119] Hadith 305, ch. 15,1.

[120] See, for the latter, M. Asatryan, *Controversies in Formative Shiʿi Islam: The Ghulat Muslims and Their Beliefs*, Shiʿi Heritage Studies 4 (London: I.B. Tauris, 2017), 5ff. with special attention to the mention of *Silsilat al-turāth al-ʿAlawī*, a major collection of Ghulat sources published 2006–2013.

kūnī kawwana Allāh jamīʿ al-ashyā' wa-bi-qadar qadarahā Allāh).[121] In general, this and similar theories belong under the restricted letter speculation, and as such, in spite of their interest, I shall only be referring to them when they shed light on the comprehensive letter speculation.

What is to be noticed particularly in this hadith is the mention of an 'un-linguistic language' *in divinis*, with letters beyond utterance and with a word beyond language, in short, an intermediary realm (*ʿālam mutawassiṭ*), a *barzakh* where opposites are not necessarily dissociated. In the 'world' of the *barzakh*, forms are described as 'measures devoid of matter' (*maqādīr mujarrad ʿan al-mādda*),[122] 'unlike the forms of this material world and also unlike the forms of the spiritual world.'[123] Another passage in the same commentary mentions 'the mimetic and intermediary shapes or bodies', *al-ashbāḥ ayy al-ajsām al-mithāliyya wa-al-barzakhiyya*, thus making clear that these intermediary forms are conceived as metaphysical models or patterns.[124]

D. Back to Basics: Philosophy & Physics

Before moving forward in history, and taking advantage of the mention of the metaphysical dimension of the letters, we need to complete the Arabic picture of the semantic field we are studying. Following what we did in the initial pages of this enquiry, where I introduced the Greek concept of element citing Aristotle, it is now time to see what the Arabic scholars made of the polysemy of στοιχεῖον. It may be opportune to recall here, in a prefatory way, the characterisation of Aristotle given by the Suda (10th century): Ἀριστοτέλης τῆς φύσεως γραμματεὺς ἦν, τὸν κάλαμον ἀποβρέχων εἰς νοῦν, 'Aristotle was the scribe (grammarian/letterist) of Nature, dipping his pen in the Intellect' – this felicitous description implies the role of philosophy (represented by Aristotle) as an 'alphabetic mediator' between a natural world and a metaphysical domain which are somehow related to letters.[125]

---

[121] See Ebstein, *Mysticism and Philosophy*, 41ff.

[122] Note that *maqādīr* is also a technical term in prosody, meaning 'metres'.

[123] Māzandarānī, *Sharḥ*, 1.129.

[124] *Ibid.*, 3.52.

[125] See J. Monfasani, 'Aristotle as Scribe of Nature: The Title-Page of MS Vat. Lat. 2094', *Journal of the Warburg and Courtauld Institutes* 69 (2006): 194.

I. The Metaphysics

With the passing of time, the study we now know as 'metaphysics' came to be known in Arabic under two different names: one very literal from the Greek, *mā baʿd al-ṭabīʿa*, 'what is beyond nature,' and one more theological, *al-ilāhiyyāt*, 'divine matters.' As expected, Aristotle's book has been known under these two names through history. This makes it more remarkable that the earliest name for the *Metaphysics* was *Kitāb al-Ḥurūf*, 'The Book of Letters.'[126] The name was due, it was explained, to the fact that the chapters were named sequentially after the Greek letters, starting with *Metaphysics Alpha*, and so on. This was of course the usual Greek practice to enumerate sections of a literary work. The prime example is the Homeric epics, but in philosophy it is noticeably the case of the books of Plato's *Republic*, and of Aristotle's *Physics*. Why would these others not be called also *Kitāb al-Ḥurūf*? It is certainly not my intention to start speculating, but in the context of the present work, after we have seen how the order and other features of the Greek alphanumeric series made of it a model for any system of principles, it would be hard to miss the possible implications of the title.[127] In fact, it has been noted that another famous *Kitāb al-Ḥurūf*, by al-Fārābī, owes its title not only to Aristotle's work, but also to the understanding that Greek 'particles' ('particle' is one of the important grammatical meanings of *ḥarf*) are 'comparable to the logical constants of an ideal language' and 'demarcate the domain of metaphysics.'[128] It is worth noting that al-Fārābī himself refers to Aristotle's work as '*al-kitāb al-mawsūm bi-al-ḥurūf*', 'the book known by letters,' i.e. the book known by the letter-names of its chapters.

Let us now turn our attention to the 'Glossary' in book Δ, where this book started. I follow the text as found in Averroes' *Tafsīr*,[129] 'a funda-

---

[126] Ibn Nadīm (tenth century) gives it as the title, with *al-ilāhiyyāt* as an alternative; see A. Bertolacci, 'On the Arabic Translations of Aristotle's *Metaphysics*', *Arabic Sciences and Philosophy* 15, no. 2 (2005): 244ff.

[127] Cf. D. Abercrombie, 'What is a "Letter?"', *Lingua* 2 (1949): 54–63, on the ancient and medieval meaning of 'letter' in general.

[128] S. Menn, 'Al-Fārābī's *Kitāb al-Ḥurūf* and his Analysis of the Senses of Being', *Arabic Sciences and Philosophy* 18, no. 1 (March 2008): 59; this article gives a fine treatment of al-Fārābī's scope and intention. Cf. above, p. 76, my reference to 'prepositional cosmology,' especially to Dörrie, 'Präpositionen und Metaphysik'.

[129] Ibn Rushd, *Tafsīr Mā baʿd al-ṭabīʿa*, ed. M. Bouyges, 3 vols., Bibliotheca Arabica

mental witness to the different versions of the Arabic *Metaphysics*,'[130] bringing also the Hebrew version in for comparison.[131]

The Arabic word used in *Tafsīr* Δ3, and in general most frequently to translate στοιχεῖον, is a calque from the Greek, *usṭuqus* أسطقس (pl. *usṭuqusāt*), found with numerous alternate spellings and vocalisations[132] which are testimony to the instability of the foreign word. Other indigenous Arabic terms are occasionally used, like *ʿunṣur* (pl. *ʿanāṣir*), a 'race, lineage', i.e. conveying the meaning of origin, or *rukn* (pl. *arkān*), a 'pillar, cornerstone', i.e. a structural support, but in metaphysical terminology, *usṭuquss* tends to be prevalent. Whereas Arabic translators decided to use this calque, which would be fleshed out with meaning through the centuries of literature, it is notable that Hebrew translators decided to use native words like *yesod*, 'fundament', *ʿetsem*, 'bone, gist', *shoresh*, 'root', and even *em*, 'mother', or *av*, 'father',[133] thus displaying in the different contexts the many aspects of the concept. It is as if the Arabic authors, recognising the untranslatable semantic complexity – precisely what we have been studying – realised that they had no equivalent that could do justice to the original and decided to use the Greek word which acted as an empty semantic container.[134]

Scholasticorum, Série Arabe, V, 2 (Beirut: Imprimérie Catholique, 1938), 499ff. See also Halper, 'Averroes on Metaphysical Terminology', especially the glossary tables, 436ff.

[130] Bertolacci, 'On the Arabic Translations', 250.

[131] While the concept relevant to this research does not presently warrant a wider survey, I would like to draw attention to the valuable philosophical glossaries in the Arabic tradition which, though varying in scope and extension, could be considered successors of *Metaphysics* Δ. K. Kennedy-Day, *Books of Definition in Islamic Philosophy: The Limits of Words* (London & New York: RoutledgeCurzon, 2003) gives a good introduction. Al-Kindī, Ibn Sīnā and Isaac Israeli authored each a *Kitāb al-ḥudūd*, *Book of Definitions*; al-Fārābī wrote his *Alfāẓ al-mustaʿmala fī al-manṭiq*, *Terms Used in Logic*, similar to al-Ghazālī's glossary in his logic treatise *Miʿyār al-ʿilm*; Jurjānī (d. 1078 AD) wrote a *Compendium of Definitions*, *Muʿjam al-taʿrifāt*.

[132] Including *isṭaqis*, *asṭaqis* and others, see *Munjid*, 11.

[133] *Thesaurus philosophicus linguae hebraicae (Otsar ha-munahim ha-filosofiyyim)* (Berlin: Eshkol, 1928) (hereafter cited as Klatzkin), *ss.vv.*

[134] The ending in *sin* of *usṭuquss* has been considered evidence that the word comes from στοῖχος, 'row' instead of στοιχεῖον. Even though this sounds plausible and might give rise to interesting morphological precisions, I doubt that it would have much impact on the semantics of the term.

On some occasions, when the grammatical meaning is clear, the Arabic translators have also used *ḥarf*, and the Hebrew *ot*.[135] There is not much of immediate interest for us in the detailed comparison between the texts of the *Metaphysics*, since the translators have used different words when necessary, bringing out the aspects of the concept according to the context. Other major works of philosophy, like Ibn Sīnā's section on metaphysics in his *Shifā'* follow the same flexible usage, and I shall cite some of them in the coming pages, but only specially relevant passages.[136]

In the wider philosophical and scientific literature, a recurrent device which highlights the difficulty of the translation is the use of a hendiadys (two nouns paired to express one single idea) to translate *usṭuquss*. In Aristotle's *Rhetoric* (II, 26, 1403a18 and elsewhere), the combination *ḥurūf wa-uṣūl*, 'letters and principles' is used to translate στοιχεῖα; alternative combinations include *ḥurūf ayy usṭuqussāt*, 'letters, i.e. "elements"', or also *ʿanāṣir wa-uṣūl*, 'elements and principles.'[137]

It is also worth noting, and again an indicator of the early semantic instability of *usṭuquss*, how the original Greek expression τὰ καλούμενα στοιχεῖα, 'the so-called elements,'[138] was occasionally translated literally in Arabic in spite of losing its meaning in a new language: *allatī tusammā usṭuqussāt*, 'the ones called "elements"',[139] does no longer convey the implicit lexical objection read by most interpreters of the Greek text, because *usṭuquss* is already a foreign term and an empty vessel in Arabic, with no previous meaning to play upon. In contrast to this, we find also the

---

[135] See Halper, 'Averroes on Metaphysical Terminology', 2,80; 24,8.

[136] For a number of examples, see G. Endress and D. Gutas, *A Greek and Arabic lexicon: Materials for a Dictionary of the Mediaeval Translations from Greek into Arabic*, Handbuch der Orientalistik. Erste Abteilung, der Nahe und Mittlere Osten (Leiden: Brill, 2013) (hereafter cited as GALex), *s.v. usṭuquss*, and see in particular the still unpublished filecards made available online at Glossarium Graeco-Arabicum (http://telota.bbaw.de/glossga/).

[137] Cf. above, p. 91, my reference to the use of *ʿunṣur* in Nicomachus *De Arith.*, 2, 1. Kraus' assertion that *usṭuquss* was never used in the sense of 'letter' could only be true of a restricted alchemical corpus; see P. Kraus, *Jābir ibn Ḥayyān. Contribution à l'histoire des idées scientifiques dans l'Islam II: Jābir et la science grecque*, Mémoires de l'Institut d'Egypte 45 (Cairo: Institut français d'archéologie orientale, 1943), 237.

[138] See above p. XVII; Diels, *Elementum*, 25.

[139] Arist. *Gener. anim.* I, 1, 715a11; see GALex, 218.

variant *allatī tusammā al-uṣūl*, 'the ones called principles,' which makes better sense in translation.[140]

Galen, notably, wrote a treatise entitled Περὶ τῶν καθ᾽ Ἱπποκράτην στοιχείων, *On the Elements according to Hippocrates*, in which he compares ἀρχαί to στοιχεῖα, discussing the meanings of these terms according to several schools. It was partially translated into Arabic and commented by Ḥunayn ibn Isḥāq (*Kitāb Jālīnūs fī al-usṭuqussāt alā ra'y Abuqrāt*), who tries to shed some light on the confusion regarding the different translations of *usṭuquss*.[141] This 'element' 'differs from *ʿunṣur* in that, unlike the latter, it possesses qualities,' and from *ibtidā'* because the *usṭuqussāt* 'are "parts of the generated thing, existing *in potentia*".'[142] I shall not enter into the discussion, but only point out that the fact that *usṭuqussāt* was the term used for the title would seem to agree with the undecided status of the elements in this treatise, halfway between material reflection of the elemental qualities and corporeal *minima*, or sometimes considered minimal in respect of size, and others as minimal in respect of quality.[143]

A valuable contrast is here furnished by the translation of the most famous of the related titles, namely Euclid's Στοιχεῖα, which became in Arabic the unequivocal *Uṣūl* or *Uṣūl al-handasah*, *Principles of Geometrical Construction*[144] (and in Hebrew *Ha-Yesodot*, *The Foundations*). Whereas the meaning of στοιχεῖα in a medical or chemical context was elusive and hard to define, it seems to have been clear in the logical, mathematical sense. On a similar note, Euclid is known to have also written, following Pythagorean teachings, a treatise on the elements of music, and it is reported that Proclus, together with his disciple Marinus, pointed to a rapprochement between Euclid's *Elements* and the elements of alchemy. Though sadly not extant, the musical treatise was related to an anonymous text dealing with the στοιχεῖα of music and alchemy, and attributed

---

[140] Artem. *Onirocr.* 5.21.

[141] See G. Bos and Y. T. Langermann, 'An Epitome of Galen's on The Elements Ascribed to Ḥunayn Ibn Isḥāq', *Arabic Sciences and Philosophy* 25 (2015): 36.

[142] *Ibid.*, 36–7.

[143] R. J. Hankinson, 'Substance, Element, Quality, Mixture: Galen's Physics and His Hippocratic Inheritance', consulted on 21 June 2018, *Aitia (online)* 7, no. 2 (2017): 11.

[144] Also, rarely, *al-Usṭuqussāt*; see W. Fischer and H. Gätje, *Grundriss der arabischen Philologie*, 3 vols. (Reichert Verlag, 1987), III.62.

to an unidentified Zosimus.[145] The underlying common ground here is the study of harmonics, the theoretical arithmetic basis for the tuning of musical instruments, through which mathematical proportions are in a way transmuted and made tangible in sound.[146]

All these chemical, medicinal, musical and alchemical tangents of the science of the elements set the scene for an important landmark in the development of our concept in Arabic tradition, the works of Jābir ibn Ḥayyān, with which we shall bring this chapter to an end.

II. Jābir and 'The Element'

Alchemical works began to enter Islamic lands from Alexandria as early as the seventh century, even before the time of Jābir ibn Hayyān, a legendary figure of the eighth and early ninth centuries – a disciple of Jaʿfar al-Ṣādiq – who is often viewed as the founder of Arabic alchemy, and whose image would be enormously influential in later European alchemical literature under the name of Geber. The authorship and Arabic provenance of the Latin writings ascribed to him have been the object of the 'Geber problem',[147] but I shall not be dealing with these works, as there is an earlier and large Arabic corpus of works in which the different terms used to translate στοιχεῖον coexist in remarkable ways.

It is generally agreed that the name 'Jābir' stands *more Homerico* for a collective rather than a single author, and it is established that the chronology of 'his' life does not quite agree with the possible dates of large part of his works. I shall be referring to the person and the received chronology[148] with the understanding that they may still correspond to a significant part of a historical Jābir, and that in any case they correspond to a part of the conceptual story I am narrating here.

---

[145] See A. Barbera, *The Euclidean Division of the Canon: Greek and Latin Sources*, vol. 8 (Lincoln and London: University of Nebraska Press, 1991), 11, for a thorough study of the Κατατομὴ κανόνος.

[146] See Shiloah, 'The Origin of Language', 154, for the corresponding phonetic-alchemical correspondence.

[147] For a summary of the debate, see A. Y. Al-Hassan, 'The Arabic Origin of the *Summa* and Geber Latin Works: A Refutation of Berthelot, Ruska and Newman on the Basis of Arabic Sources', in *History of Science and Technology in Islam*, now published also as chapter 3 of his *Studies in al-Kimya'* (Georg Olms, 2009).

[148] M. Al-Nadīm, *Al-Fihrist*, ed. G. Flügel (Leipzig: F. C. W. Vogel, 1872), 354.

Just as in Jābir's works are blended the Greek philosophical influence that came from Ḥarrān, and the Shīʿī heritage in doctrines of Ismaili and Qarmatian character, we find within the corpus a remarkable doctrine of the *usṭuquss* and also a very developed isopsephic technique under the name of the 'balance of the letters' (*mīzān al-ḥurūf*).[149]

III. The 'Element' of the Foundation

Kitāb al-usṭuquss al-uss is the title of the exposition presented in the first four treatises of the *112 Books*, the first of the four groups of writings in the Jābirian corpus.[150] It consists of three numbered treatises and a fourth one which acts as a *tafsīr* of the previous three. The title, *The Element of the Foundation*, has a remarkable Milesian ring to it,[151] echoing early 'one element' cosmologies, like 'All is water' and 'All is fire,' as they were characterised by Aristotle. *Al-uss* (pl. *asās*) has strong building connotations in an architectural sense,[152] and it is often used to translate Gr. θεμέλια, foundation stones. In combination with *usṭuquss*, the reference is clearly to 'foundation' in a sense close to matter, and in any case not of the more abstract metaphysical level, and this agrees with the alchemical context, with the liminal science and art of transmutation.

Due to the alchemical practice of 'scattering of knowledge' (*tabdīd al-ʿilm*), whereby no topic is treated in linear form, but rather as if in a mosaic, with strands of a single discourse occurring and recurring in seemingly haphazard fashion, it takes some pages for Jābir to begin to explain what is meant by the title of the book, then it takes longer to develop the explanation, and the definitions pile up as so many facets of the concept: the first definition of 'element' follows Aristotle, 'something into which all things dissolve and of which they are composed,' but shortly after there is a sharp turn into the alchemical proper, 'the philosophers' stone

---

[149] See the extensive annotated bibliography in P. Kraus, *Jābir ibn Ḥayyān. Contribution à l'histoire des idées scientifiques dans l'Islam I: Le corpus des écrits jabiriens*, Mémoires de l'Institut d'Egypte 44 (Cairo: Institut français d'archéologie orientale, 1942).

[150] The four groups are: *The 112* (sc. treatises), *The 70*, the *Books of the Balances* (*Kutub al-mawāzīn*), and *The 500*; see P. Zirnis, 'The *Kitab Ustuqus al-Uss* of Jabir ibn Hayyan' (PhD diss., New York University, 1979), 22.

[151] Bos and Langermann, 'An Epitome of Galen's', 38.

[152] It is defined as *aṣl al-binā'*, see Ibn Manẓūr, *Lisān al-ʿarab*, 6.6.

of virtuous colour… this is the "element" of this Art.'[153] Further down the text, the 'four pillars' (*arkān*), referring to the four elemental bodies, are said to be, each one, an *usṭuquss* too, and thereafter the title of the treatise is made clear: it is called '*The Element of the Foundation*, because it sums up the dissolution and composition of the parts of the elixir,' while *al-uss* indicates the fundamental role of this particular treatise within the *112 Books*.[154]

Later in the book, in the second part, a direct reference is made to the Galenic discussion mentioned above, where *ʿunṣur* is given as a synonym of element.[155] The discussion goes along the lines of philosophical discourse and several opinions are given from different sources: the 'Element' is identified successively with the 'receptive matter' (*mādda al-mawḍūʿa*), with a 'religious idea' (*maʿnā diyānī*), and with 'guidance itself', and 'the art and the practice' (*al-ṣanāʿa wa-al-ʿamal*), in a way that reminds of Sufi pious practices; finally, the 'Element' is identified to the Prophet and the 'Foundation' (*al-uss*) to a legatee (*waṣī*), who would most likely refer to ʿAlī.[156] The fourfold introduction to the *112 Books* is thus, from our point of view, an extraordinary catalogue of the potential meanings of the 'Element', ranging from the Hellenistic philosophical to the Islamic Imāmī. But perhaps, and more simply, it was that the semantically malleable and high-born term was a perfect candidate to be the centre of a cosmological and alchemical discourse.

IV. The Balance of the Letters

In Jābir's historical context – an Islamic environment between the seventh and the ninth century – any mention of the *mīzān* would have evoked an immediate association with Sura *al-Raḥmān* (Qur'ān 55:7–9), 'He has set the balance (*mīzān*) so that you may not exceed in the balance: And establish weight (*wazn*) in justice and do not fall short in the balance.' Jābir's balance, just as in this Qur'ānic context, was meant to measure all of creation; the entire universe could be deciphered through its laws.[157]

---

[153] *K. Usṭuquss al-uss I*, in Jābir ibn Hayyān, *Muṣannafāt fī ʿilm al-kīmīyā (The Arabic Works of Jābir ibn Ḥayyān)*, ed. E. J. Holmyard (Paris: Geuthner, 1928), 72.

[154] *Ibid.*, 73; Zirnis, 'The *Kitab Ustuqus*', 41.

[155] Jābir ibn Hayyān, *Muṣannafāt*, 79ff.

[156] *Ibid.*, 82; Zirnis, 'The *Kitab Ustuqus*', 120.

[157] *Ibid.*, 20.

In keeping with the customary 'scattering', the ideas on the Balance are scattered throughout the 144 treatises of the *Kutub al-mawāzīn*, but the practical gist is that it is a method of letter manipulation, called the 'balance of the letters' (*mīzān al-ḥurūf*), and based completely on the numerical values of the letters. These values allowed the alchemist to calculate or decipher the intrinsic properties of animals, plants, minerals and all creatures, thus acquiring knowledge with a view to the obtention of the alchemical elixir. The relation to the transformative power of alchemy is established on several levels: this manifestation of the operative science of letters and words (*sīmiyā*) is a science of the transmutation of language just as *al-kīmiyā* deals with the transmutation of matter.[158] If we recall the patronage of Hermes, god of alchemy, upon language, it is easy to see the shared characteristics between the two realms: the mobility, the ever shifting bearings, the uninterrupted flow of movement, either as a phonetic stream of sounds or a graphical sequence of characters which metamorphose into each other incessantly, like snakes.[159]

The principle underlying Jābir's Balance is 'the coordination between the letters forming the words and the Natures or elements constituting the things named.'[160] It is not only a manifestation of the seminal idea explored in the *Cratylus*, of language as a direct prolongation of reality and a doorway to reality, but it is also the clearest manifestation we have found so far of the total identification between letter, number and concept; it is the science of *names as alphanumeric realities*. It can naturally be viewed as a kind of particle physics, and this is why it has often been compared to the atomism of Democritus and to that of the *Timaeus*.[161] In fact, the lineage proposed for the precedents of Jābir's Balance retraces closely some stages of the previous pages of this work: the association with the Pythagorean tradition is there, as is the affinity with Philo's cosmology.

More specifically, with respect to the Balance theory, it is through the four elements – or more precisely the elemental qualities – that beings relate to their numeric values. The isopsephic analysis of the words allows the alchemist to determine the quality of the particular mixtures and their

---

[158] P. Lory, *La Science des lettres en Islam* (Paris: Dervy, 2004).

[159] See above, p. 33.

[160] Kraus, *Jābir et la science grecque*, 236.

[161] *Ibid.*, 237.

deficiencies or excesses, and so to bring them closer to the perfection of the elixir.[162] Jābir expresses forcefully the interpenetration between the 'Natures' (*ṭabā'iʿ*) (sc. of the four elements or the qualities) and the letters (*ḥurūf*): *unẓur ilā al-ḥurūf kayfa wuḍiʿat ʿalā al-ṭabā'iʿ wa-ilā al-ṭabā'iʿ kayfa wuḍiʿat ʿalā al-ḥurūf*, 'See how the letters are imposed (*wuḍiʿat*) on the Natures, and how the Natures are imposed on the letters,' and later 'how they transform into (*tantaqal*) each other…'[163] As could be expected, the relation between the Jābirian writings and the Arabic grammatical tradition is strongly apparent in some of the treatises and in the terminology.[164] Similarly evident is the connection to the Greek arithmological tradition, running through a line of Pythagorean references. But what is characteristic here is the accomplished synthesis. In later times, a comparable doctrine, though less comprehensive, developed in a Jewish milieu, invoking as a forerunner Bezalel 'the prototype of alchemists', whom we had encountered in previous pages as the divinely inspired craftsman 'who knew how to combine the letters by which heaven and earth were created.'[165]

*

In these two doctrines from the Jābirian corpus we find expressed in more than one way the intrinsic dualities of the concept of στοιχεῖον: one deals with the more philosophical sense and the other with the more grammatical; but also it is as if one of them had to do mostly with the singular στοιχεῖον, the one universal 'element of foundation', while the other has to do with the multiplicity manifest in the alphabetic series, στοιχεῖα. What is common to both is the *alchemy*, meaning by this the power attributed to the 'element' and the 'letters', and also their liminal, transformative, properly *alchemical* character.

*

---

[162] I am very grateful to Sébastien Moureau for sharing his Jābirian knowledge. Cf. Ebstein, *Mysticism and Philosophy*, 97.

[163] Kraus, *Jābir et la science grecque*, 239.

[164] The key name of the 'balance', *mīzān*, is directly related to *wazn*, one of the most fundamental terms of Arabic grammar, meaning originally 'weight', but used to denote a morphological 'pattern' or 'template', and in prosody a 'metre'; see EALL, 2.448–50.

[165] Patai, *The Jewish Alchemists*, 296.

More generally now, trying to take stock of the previous chapters before moving on to the last part, a similar pattern can be discerned in the different stories of the στοιχεῖα in the Abrahamic scriptural and in the Hellenistic traditions: it is a pattern of *incorporation*, of embodiment of the doctrine of the letter-numbers, moving from lofty cosmological and theological speculations to a more humanly accessible reality, either through the soteriological and ascetic religious developments or through the transformation of alchemical techniques. It is not a complete process, and this is why I shall directly proceed to explore the developments as if in a second historical stage, even as the particular traditions under study continued to evolve and to subtly interpenetrate each other in countless ways around the Mediterranean.

Part III

World Construction: Systems of Cosmic Design

Introduction to Part III: System Building

After having scratched the surface of the 'scriptural' *foundations* of the alphanumeric identity in Late Antiquity and the early Middle Ages, I shall employ the following three chapters to illustrate with a few significant examples the *elaborations* that signal the transformation of the concept we follow. This transformation is manifest in doctrinal *crystallization*, as in *systematic* expositions of previously unconnected or dimly connected aspects, and it is a transformation which can be seen at once as an indication of a mature sophistication, and as the heralding of the end of an 'alphanumeric age' *stricto sensu*.[1]

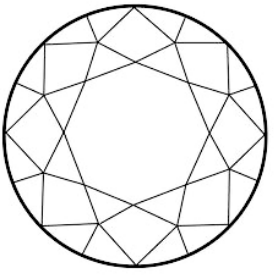
As in Part 2, I will again devote one chapter to each of the three Abrahamic faiths, more for methodological ease than to emphasise very clear doctrinal distinctions. Rather, as shown variously by the amalgamation of the Hermetic tradition into the Jewish, Christian and Muslim doctrinal corpora, the High Middle Ages present us again and again with the inspiring evidence of a fully shared intellectual life among scholars of the three faith communities. My exposition will be centred, with a few necessary complements and asides, on key passages from the *Sefer Yetsirah*, certain doctrinal developments from Aquinas' *Summa Theologiae* and some passages from Ibn ʿArabī's works.

[1] See below, p. 277, for details about the 'alphanumeric age'.

Chapter 7

Sefer Yetsirah: The Bright Jewel of Alphanumeric Cosmopoiesis

The *Sefer Yetsirah* (henceforth *SY*) would surely rank among the very first of a list of works whose size is out of proportion with their cultural impact; even the longest of its various versions is just above two thousand words,[1] and the shortest of its versions retains perfect readability even when set on two small pages, as illustrated by the following pages, which contain the text in full. The *SY* would also rank very high among books whose obscurity of origin is in contrast to the brightness of their influence. It is like a precious stone: we know next to nothing about its origin, with only guesses about its authorship and date of origin, and yet, like a brilliant[2] with a structure based on a pattern of thirty-two, it seems to have gathered and refracted within its symmetry the light received from previous centuries of alphanumeric wisdom literature, and then to have reflected it with renewed force and charm for later generations.



CUT PATTERN OF A BRILLIANT, TOP VIEW

[1] See D. Karr, 'Notes on Editions of *Sefer Yetzirah* in English', 1; this most useful bibliographic survey has been kept up to date since 1991 and gives a comprehensive overview of the available literature in English, with a few references to secondary literature in other languages too.

[2] 'Brilliant', used as a noun, refers here expressly to the diamond cut designed in the early twentieth century to optimise the light return of the gemstone.

וקשר לו כתר וחתם בו אויר בעולם רויה בשנה וגויה בנפש. המליך את מם במים וקשר לו כתר וחתם בו ארץ בעולם וקור בשנה ובטן בנפש. המליך את שין באש וקשר לו כתר וחתם בו שמים בעולם וחום בשנה וראש בנפש. שבע כפולות בגד כפרת מתנהגות בשתי לשונות חיים וְשלום וחכמה ועושר חן זרע ממשלה ומתנהגות בשתי לשונות בי בי גימל גימל דלת דלת כף כף פי פי ריש ריש תיו תיו רק וקשה גיבור וחלש. שבע כפולות בגד כפרת משתמשות בשני לשונות בֵּי בֵי גִימל גִמַל דֶלֶת דֶלֶת כַּף כַף פֵּי פֵי רֵישׁ רֵישׁ תָיו תָיו רך וקשה תבנית גבור וחלש כפולות שהן תמורות תמורת חיים מות תמורת שלום רע תמורת חכמה אולת תמורת עושר עוני תמורת זרע שממה תמורת חן כיאור תמורת ממשלה עבדות. שבע כפולות בגד כפרת שש קצוות והיכל קדוש מוכן באמצע והוא נושא את כולם. שבע כפולות בגד כפרת חקקן חצבן צרפן וצר בהן כוכבים ימים ושערים. כאיזה צד צרפן שתי אבנים בונות שני בתים שלוש בונות ששה בתים ארבע בונות עשרים וארבע בתים חמש בונות מאה ועשרים בתים שש בונות שבע מאות ועשרים בתים שבע בונות חמשת אלפים וארבעים בתים מיכאן ואילך צא וחשוב מה שאין הפה יכולה לדבר ומה שאין האוזן יכולה לשמוע. חיצה את העדים והעמידן אחה אחד לבדו עולם לבדו, שנה לבדה נפש לבדה. שתים עשרה פשוטות הוזחטילקסעצק יסודן ראיה שמיעה ריחה שיחה לעיטה תשמיש מעשה הילוך רוגז שחוק הרהור שינה. שנים עשר גבולי אלכסון גבול מזרחית צפונית גבול מזרחית דרומית גבול מזרחית רומית גבול מזרחית תחתית גבול צפונית תחתית גבול צפונית מערבית גבול צפונית רומית גבול מערבית תחתית גבול מערבית דרומית גבול מערבית רומית גבול דרומית תחתית גבול דרומית רומית. שתים עשרה פשוטות חקקן צרפן חצבן שקלן והמירן וצר בהם מזלות וחדשים ומנהיגים. אילו עשרים ושתים אותיות שבהן יסד יה׳ יהי׳ צבאות אלהים חיים אלהי ישראל רם ונשא שוכן עד וקדוש שמו. שלשה אבות ותולדותיהן ושבעה כבשים וצבאותיהן ושנים עשר גבולי אכלוסין וראיה לדבר עדים נאמנים עולם שנה ונפש. חק עשרה שלשה ושבעה ושנים עשר פקודין בתלי וגלגל ולב. תלי בעולם כמלך על כסאו גלגל בשנה כמלך במדינה לב בנפש כמלך במלחמה. גם כל חפץ זה לעומת זה עשה אלהים טוב לעומת רע רע מרע וטוב מטוב טוב מבחין את רע ורע מבחין את טוב טובה גנוזה לטובים. עשאן כמין מריבה וערכן כמין מלחמה גם את זה לעמת זה עשה האלהים. שלשה אחד אחד לבדו עומד שבעה שלשה חלוקין על שלשה ואחד חוק מכריע בנתיים שנים עשר עומדין במלחמה שלשה אויבים ושלשה אוהבים שלשה מחיים ושלשה ממיתים וכולן אדוקין זה בזה. כשהבין אברהם אבינו וצר וצרף וחקר וחשב ועלתה בידו ניגלה עליו יי

שלשים ושתים נתיבות פלאות חכמה חקק יה יהוה צבאות בשלש ספרים בספר וספר וספור. עשר ספירות בלי מה מספר עשר אצבעות חמש כנגד חמש וברית יחיד מכוונת באמצע במילה ולשון ופה. עשר ספירות בלי מה עשר ולא תשע, עשר ולא אחת עשרה הבן בחכמה וחכם בבינה בחון בהם וחקור מהם והעמד דבר על בריו והשב יוצר על מכונו. עשר ספירות בלי מה בלום פיך מלדבר בלום לבך מלהרהר ואם רץ ליבך שוב למקום שכך נאמר רצוא ושוב ועל דבר זה נכרתה ברית. עשר ספירות בלי מה נעוץ סופן בתחילתן ותחילתן בסופן כשלהבת בגחלת שהיוצר אחד ואין לו שיני ולפני אחד מה אתה סופר. עשר ספירות בלי מה ומידתן עשר שאין להן סוף עומק ראשית ועומק אחרית עומק טוב ועומק רע עומק רום ועומק תחת עומק מזרח ועומק מערב עומק צפון ועומק דרום ואדון יחיד אל מלך נאמן מושל בכולן ממעון קדשו ועד עדי עד. עשר ספירות בלי מה צפיתן כמראה הבזק ותכליתם אין להן קץ ודברו בהן כרצוא ושוב ולמאמרו כסופה ירדופו ולפני כסאו הם משתחוים. עשר ספירות בלי מה אחת רוח אלהים חיים זו היא רוח הקודש. שתים רוח מרוח חקק וחצב בה ארבע רוחות השמים. שלש מים מרוח חקק וחצב בהם תוהו ובוהו רפש וטיט חקקן כמין ערוגה הציבן כמין חומה סיככן כמין מעזיבה. ארבע אש ממים חקק וחצב בה כסא כבוד וכל צבא מרום שכך כתוב עשה מלאכיו רוחות. חמש חתם רום פנה למעלה וחתמו ביהו שש חתם תחת פנה למטה וחתמו ביוה שבע חתם מזרח פנה לפניו וחתמו בהוי שמנה חתם מערב פנה לאחריו וחתמו בהיו תשע חתם דרום פנה לימינו וחתמו בויה עשר חתם צפון פנה לשמאלו וחתמו בוהי. אילו עשר ספירות בלי מה רוח אלהים חיים ורוח מים אש. מעלה מטה מזרח מערב צפון ודרום. עשרים ושתים אותיות יסוד שלש אמות שבע כפולות ושתים עשרה פשוטות. עשרים ושתים אותיות חקוקות בקול חצובות ברוח קבועות בפה בחמש מקומות אח הע בו מף גי כק דט לנת זס שרץ. עשרים ושתים אותיות קבועות בגלגל חזר גלגל פנים ואחור סימן לדבר אין בטובה למעלה מעונג ואם ברעה למטה בנגע. עשרים ושתים אותיות חקקן חצבן צרפן שקלן והימירן כיצד שקלן והמירן אלף עם כלם, וכלן עם אלף בית עם כלן וכלן עם בית וכלן חוזרות חלילה נמצאו יוצאות במאתים ושלשים ואחד שערים נמצא כל היצור וכל הדבור יוצא בשם אחד. יצר מתוהו ממש ועשאו באש וישנו וחצב עמודים גדולים מאויר שאינו נתפש. שלוש אימות אמש יסודן כף זכות וכף חובה ולשון חק מכריע בינתיים. שלוש אמות אמש סוד גדול מכוסה ומופלא וחתום בשש טבעות וממנו יוצאין אש מים ורוח ומחותל בזכר ונקבה. שלש אמות אש למעלה מים למטה ורוח חק מכריע בנתיים. שלש אימות אמש מם דוממת שין שורקת אלף רוח חק מכריע בנתים. המליך את אלף ברוח

Thanks to Hayman's and Gruenwald's works,[3] effectively the two most significant landmarks in the textual history of *SY*, and unless new manuscripts are discovered, we are nowadays probably as close as we can be to a comprehensive vision of the three main recensions in which *SY* appears from the earliest evidence.[4] The earliest evidence of the existence of *SY* is given by one of its commentaries,[5] the one authored in Arabic by Saʿadyā Gaon and dated 931, which is our *terminus ante quem*.[6] Because by the time of Saʿadyā's commentary the textual tradition already exhibits three well attested strands, it seems obvious that the origin must be found before the ninth century, and in fact, it is the quest for the earliest possible date of existence of the text that has been occupying the experts for decades, with arguments ranging from the second century AD to the ninth century.[7] Because most arguments for an earlier dating are based on doctrinal parallels, I shall refer to these separately later.

It has become almost fashionable to elaborate on the 'fluidity' of the textual state of *SY*, which, according to Wolfson, 'should be seen rather as a composite of distinct literary strands,'[8] instead of being considered a text in any modern sense. I shall not enter into textual discussions other than in the few passages related to this research, but what can be observed is that the textual confusion, for all its bewildering abundance, was never enough to obscure the doctrinal core of the *SY*, which is evidently what has attracted readers through the ages. Regardless of how many authors contributed

---

[3] A. P. Hayman, *Sefer Yeṣira*, Texts and Studies in Ancient Judaism 104 (Tübingen: Mohr Siebeck, 2004); I. Gruenwald, 'A Preliminary Critical Edition of Sefer Yezira', *Israel Oriental Studies* 1 (1971): 132–177.

[4] Hayman himself refers to Gruenwald's edition to complement his own *vis-à-vis* the inclusion of some manuscripts and readings (p. 9ff.), so in fact, regarding all philological points, they may be treated as a two-volume work.

[5] It has been said that aside from the *Tanakh*, no other Jewish work has been commented on as extensively as the *SY*. Cf. also Wasserstrom, 'Sefer Yesira and Early Islam: A Reappraisal', for dating matters.

[6] Hayman, *SY*, 18.

[7] See M. Segol, *Word and Image in Medieval Kabbalah*, The New Middle Ages (New York: Palgrave MacMillan, 2012), 25ff.; note particularly in Hayman, *SY*, 41, 95, how a detailed analysis of the textual evidence impacts the complex dating question.

[8] E. Wolfson, 'Text, Context, and Pretext: Review Essay of Yehuda Liebes's *Ars Poetica in Sefer Yetsira*', *The Studia Philonica Annual* 16 (2004): 218.

to the 'mythical' or 'illusory' 'original text',[9] it is clear that at some point in the history of the book, a number of paragraphs encapsulated a discernible doctrine considered worthwhile by many of the greatest Jewish scholars who commented on it. I quite agree with Segol's intuition that a great part of the text's 'meaning' has to do with its structure, that there is 'a discernible pattern in its organization that is key to understanding its meaning and function.'[10] I would add that the other essential factor constituting the core of the book is a small constellation of key concepts, like *sefirah* and *ot yesod* ('letter of foundation').[11] It is in no small measure due to the symbolic power of these key concepts, and to the subtle web of their linguistic interplay – like glints within a gem – that *SY* had and continues to have such unabating influence.

In the following pages I will examine some particular passages of the book and its commentary tradition in the light of our alphanumeric quest, focusing on some of the Hebrew terms and their place in the history I have been drawing in previous pages. Before introducing some reflections on the title and authorship of the book, it will be better to start by presenting directly those verses of *SY* which are most relevant to this work, to comment on them, and only later to introduce other notable passages as needed.

A. Selections from the Text

1 שלשים ושתים נתיבות פליאות חכמה חקק יה יהוה צבאות בשלש ספרים בספר ספר וספור 2 עשר ספירות בלי מה ועשרים ושתים אותיות יסוד שלש אמות ושבע כפולות ושתים עשרה פשוטות

19a עשרים ושתים אותיות חקקן חצבן צרפן שקלן והימירן 59 חק עשרה שלשה ושבעה ושנים עשר פקודין בתלי וגלגל ולב 48a עשאן כמין מריבה וערכן כמין מלחמה גם את זה לעמת זה עשה האלהים

61 כשהבין אברהם אבינו וצר וצרף וחקר וחשב ועלתה בידו ניגלה עליו יי קרא עליו המקרא הזה בטרם אצורך אצרך בבטן ידעתיך וגו׳

1) Yah, Lord of Hosts, carved (*ḥaqaq*) thirty-two wondrous paths of wisdom in three count-modes (*sefarim*): in writing (*sefer*), in number (*sefar*), and in speech

[9] See *ibid.*, 222.

[10] Segol, *Word and Image*, 16.

[11] Segol speaks of 'letterforms' along similar lines, see *ibid.*, 143.

(*sippur*). 2) They are ten absolute numerations (*sefirot beli mah*) and twenty-two elemental letters: three mothers, seven doubles and twelve simples.

19a) Twenty-two letters: he carved them out, he hewed them, he combined them, he weighed them and he exchanged them. 59) Law of ten, three, seven, and twelve, they are present in the heavenly axis (*teli*),[12] in the sphere and in the heart. 48a) He made them as if in strife, he arranged them as in battle array, 'God made the one side by side with the other.'[13]

61) When Abraham our father understood and formed and combined and investigated and pondered, and the matter came into his possession, the Lord was revealed to him, and He recited over him this scripture: 'Before I formed you in the womb I knew you; and before you came forth out of the womb I sanctified you, and I ordained you a prophet unto the nations.'[14]

The *SY* presents itself from the outset as a compendium of cosmogony and cosmology based on the Hebrew language.[15] There are thirty-two paths of wisdom which comprise the ten primordial numbers (*sefirot*) and the twenty-two Hebrew letters. So from the very start we seem to encounter here a set of 'elements' (the 'paths') which comprises numbers and letters, just as the στοιχεῖα, but in this case they no longer coalesce, but appear to be clearly distinguished. I insist quite deliberately on the *appearance* of numbers and letters, because the text does not actually speak of them, but rather uses two very unusual expressions, as I have tried to reflect in my translation above: *sefirah* is not the same as *mispar*, number, just

---

[12] For the translation of *teli*, see A. Kaplan, *Sefer Yetzirah: The Book of Creation in Theory and Practice*, revised edition (Boston, MA: Weiser Books, 2004), 231–39; see also P. Mancuso, 'Cosmological Traditions in Judeo-Byzantine South Italy: A Preliminary Analysis', in *From Māshā'allāh to Kepler: Theory and Practice in Medieval and Renaissance Astrology*, ed. C. Burnett and D. G. Greenbaum (Sophia Centre Press, 2015), 320–24.

[13] Ecc. 7:14.

[14] Jer. 1:5. Aside from specific minor variations which I shall indicate, I follow Hayman's 'earliest recoverable text', that is his attempt at reconstructing the common ground of the three accepted recensions; see Hayman, *SY*, 33ff., 49–51. Following Gruenwald, 'A Preliminary Critical Edition', 484, I take here verse 2 as a gloss of the thirty-two 'paths'.

[15] As such, Wolfson has related it to the esoteric rabbinic tradition known as *maʿaseh bere'shit*, the 'work of creation', noting also that some parts of it belong to the *maʿaseh merkavah*, the 'work of the chariot'; see E. Wolfson, 'Jewish Mysticism: A Philosophical Overview', in *The Routledge History of Jewish Philosophy*, ed. D. Frank and O. Leaman (New York and London: Routledge, 1997), 450–498.

as *ot-yesod* is not the same as a simple letter, *ot*.[16] In order to better appreciate their qualities and how they relate to this research, let us now dwell individually on each of these three sets of elements: the paths, the numerations and the letter-elements.

I. The Thirty-Two Wondrous Paths of Wisdom

Quite remarkably and in direct relation to our main concern, Leo Baeck had already suggested that 'the word *n'tivot* ("paths") might be a *transference* of the Greek στοιχεῖα, which depicts the *Urprinzipien* [primary or first principles] as well as the *letters* and the signs of the *zodiac*.' According to his interpretation, the root word στοῖχος, 'line' and its verb form στοιχεῖν, or 'to advance in a row,' could have meant the same to some Greek and Hebrew readers as the word *n'tivot*.[17] In his recent monograph, Yehuda Liebes suggests that the central theme of *SY* is not the universe itself in its construction, but rather the 'stones' themselves used to build it, namely the thirty-two paths, which he calls *ha-yesodot ha-nistarim shel hokhmat mevinah ha-yaqum*, 'the hidden elements of the intelligent wisdom of the universe.'[18]

Such emphasis on the importance of the 'paths' is at odds with some contemporary arguments for two separate original textual strands, one for numbers and one for letters, which were made into a single discourse by means of this first introductory paragraph,[19] as if a misguided late author had come up with the invention of a sort of genus, the 'wondrous paths', that encompass 'number' and 'letter'.[20] Considering the fact that §1, with

---

[16] Unlike Hayman, who treats *otiyot yesod* as a nominal clause, 'the elements are the foundation,' I read it consistently as a compound name, not only on conceptual grounds as I shall explain, but also based on stylistic reasons: as noted in Y. Liebes, תורת היצירה של ספר היצירה *(*Ars poetica *in Sefer Yetsira)* (Tel Aviv: Schocken, 2000), ch. 2, every section of the text is punctuated by the repetition of such compounds: 'ten absolute numerations', 'twenty-two elemental letters', 'three mothers' and so on. See also J. Dan, 'לתפיסת המספר בספר יצירה (The Concept of Number in the Book of Creation)', *Daat: A Journal of Jewish Philosophy & Kabbalah*, no. 34 (Winter AM 5755 / 1995 CE): 5.

[17] L. Baeck, 'Zum Sepher Jezira', *Monatsschrift für Geschichte und Wissenschaft des Judentums* 70 (1926): 371.

[18] Liebes, *Torat ha-yetsira*, 12.

[19] See Wolfson, 'Text, Context, and Pretext: Review Essay of Yehuda Liebes's *Ars Poetica in Sefer Yetsira*', 227–8, for discussion and references.

[20] G. Busi, *Qabbalah visiva* (Torino: Einaudi, 2005), 35, speaks of a 'strong conceptual

all 32 paths, is attested in all the available textual witnesses,[21] this attempt may seem hasty. And for us, from the vantage point of the alphanumeric elements in this work, the unitary concept under suspicion presents no problem. In the *SY* itself, this is the particular interest of §§59 and 48a,[22] for in them number and letter are once again subsumed within the same group: after the description of the cosmic correspondences between *sefirot* and *otiyot yesod* which take up most of the book, §59 sums up saying, 'this is the law of 10, 3, 7 and 12.' The relation to the first paragraph is underlined by the relation between *ḥaqaq*, 'to carve', the action whereby God creates the thirty-two paths, and the word for law, *ḥoq*.

Like in the Arabic cognate *ḥaqq*, the original meaning of this root, as in the Hebrew verb *ḥaqaq*, has to do with etching, inscribing and tracing.[23] The thirty-two are 'inscribed' and thus sanctioned as law by God in the universe in a manner comparable to that of the great legal inscriptions, the Mosaic Decalogue or the Roman Twelve Tables. From a mobile point view, I would also note here the important relation to the tracing of the characters, the *ductus*, considered as the *path* of the pen or the stylus. This correspondence is reinforced when we realise that the adjective applied to the paths, *peli'ot* comes from the root *p-l-'*, 'to set apart, to split.' Considering the cosmogonic context, and what appears to be the primordial bringing into being of a set of elements by separation, we are reminded of the story of Thoth in the *Philebus*, discerning, setting apart the στοιχεῖα from the formless acoustic continuum. Further, this properly kinetic aspect of the 'letters' reminds us once again of the division of the compass circle in thirty-two rhumbs, prevalent in the Mediterranean and in the Indian Ocean and as far as China throughout the Middle Ages.[24] In this *division for orientation* we also find again the relation with astronomy: effectively the starts guided the pilots by means of the division of space in thirty-two parts.

---

imbalance' between the two concepts.

[21] Hayman, *SY*, 64.

[22] The order in our selection follows Hayman's 'earliest' text proposal.

[23] E. Klein, *A Comprehensive Etymological Dictionary of the Hebrew Language for Readers of English* (Jerusalem: Carta, 1987), s.v. *ḥ-q-q*.

[24] See J. M. Malhão Pereira, 'A Evolução da Ciência Náutica e o seu Contributo para o Contacto Entre os Povos', in *Estudos da história da Náutica e das navegações de alto-mar* (Lisbon: Comissão Cultural da Marinha, 2012), 85. Above, p. 86.

There is a noteworthy textual variation at the very beginning of the text, which in many manuscripts, and certainly in most modern editions, begins with a locative or instrumental preposition, *bi-shloshim ushtayim…*, i.e. God carved 'in the thirty-two' or 'by means of the thirty-two.' Most commentators interpret that the 32 are then *instruments* of the formation of the universe, which echoes the letters being called 'helpers' of the Divine Maker, and also reminds of Philo explaining that the λόγος is the instrument used by God. However, as has been observed by Hayman, this initial preposition brings unsolvable syntactic problems. It is much preferable to read the 32 paths as the object of *ḥaqaq*, which then has an adverbial complement in *be-shalosh sefarim*, 'in three count-modes' or 'in three modes of inscribing'.

II. The Three Modes of Inscribing

According to Jospe,[25] Saʿadyā established a tradition of interpreting the three *sefarim* as *sefer* (writing), *sefar* (number), and *sippur* (speech),[26] a tradition followed by all the early philosophical commentators: Dunash, Donnolo and Judah ben Barzillai al-Bargeloni (eleventh/twelfth century). It was Halevi's *Kuzari*, not particularly dedicated to the *SY*, which 'interpreted the three *sefarim* innovatively in Aristotelian terms of the identity of the subject, act, and object of intellection.'[27] Jospe also gives a summary of Judah ben Barzillai's commentary with regard to the three *sefarim*. '*Sefar* is calculation, which is number' (*s'far ḥeshbon ve-hu mispar*) – '*sippur* is language, which is uterance' (*sippur ha-dibur ve-hu ha-ma'amar*) – '*sefer* is writing, which is script' (*sefer hu kitabah she-hu miktab*). In addition to these of his own, al-Bargelloni reports several other

---

[25] R. Jospe, 'Early Philosophical Commentaries on the Sefer Yezirah: Some Comments', *Revue des études juives* 149, no. 4 (1990): 372.

[26] In Saʿadyā's original (Judaeo-)Arabic, 'three things: *khaṭṭ wa-ʿadad wa-nuṭq*.'

[27] The relevant section is 4:25, J. Halevi, *Kitāb al-radd wa-'l-dalīl fī'l-dīn al-dhalīl (al-Kitāb al-Khazarī)*, ed. D. Baneth and H. Ben-Shammai (Jerusalem: The Magnes Press, The Hebrew University, The Israel Academy of Sciences / Humanities, 1977), 174; J. Halevi, *Le* Kuzari*. Apologie de la religion méprisée*, ed. C. Touati, Collection de la Revue des Études juives, Traduit sur le texte original arabe confronté avec la version hébraïque et accompagné d'une introduction et de notes (Paris-Louvain: Peeters, 2006), 415. The key Aristotelian ref. is *De anima*, 424a17–24; cf. J. Mitscherling and P. Fairfield, *Artistic Creation: A Phenomenological Account* (Lanham, Maryland: Rowman & Littlefield, 2019), 62–63.

interpretations by unknown commentators who equate the three *sefarim* to different triads: 'wisdom, understanding and knowledge (*ḥokhmah, tevunah, daʿat*)', 'God's creative word, command and act (*maʾamar, tsivuy, ʿasiyah*)', or the three sections of the Tanakh, *Torah, Nevi'im, Ketuvim*.

Although not along the Aristotelian lines proposed by Jospe, I find that the commentary found in the *Kuzari* is one of the most insightful, and especially useful for this comparative work because it was written in Judaeo-Arabic. Here are some passages relating to the *sefarim*:

> In the reality of God, *S'far, Sippur,* and *Sefer* are a unity, whilst they are three in the reality of man. For man reckons with his mind (*dhihn*), speaks with his mouth, and writes with his hand, referring with all three to one among the creatures of the Creator. Man's reckoning, his writing, and **his word** (*lafẓ*) are thus signs which refer to a thing but are not the thing itself. Whereas the reckoning of God and his speech are the thing in its essence, and at the same time His writing (…) So the three *sefarim*: *S'far, Sippur,* and *Sefer* are conjoined into one thing, and this product of reckoning comes to be as if one of unmixed self (*dhū al-nafs al-khāliṣa*) had calculated it (*qaddarahu*), uttered it (*naṭaqahu*) and written it. And thus this book says that God Most-High: 'created His world with three *sefarim*: *S'far, Sippur,* and *Sefer*,' which are all one in the reality of God. This is the one principle (*mabda'*) of the 'thirty-two marvellous ways of wisdom,' which are the ten Sefirot and the twenty-two letters.

Apart from approaching the passage from what appears to be a deeply monotheistic position, it is further clear evidence for the understanding that the 32 paths are the sum of the *sefirot* and the 'letters'. Some similar comprehension might be behind the Arabic title given by Saʿadyā to his translation of *SY*, *Kitāb al-mabādi'*, the *Book of Principles*.

Returning to the metaphysical notion of principle, it is important to establish a remarkable parallelism between this idea of the three 'count-modes' and the passage of Aristotle's *Metaphysics* I have repeatedly discussed earlier, where we find the definition of στοιχεῖον.[28] When the definition is given, the following three examples of composites are used: φωνή, the voice, διαγράμματα, as the graphic aspect, and ἀποδείξεις as the logical aspect of geometrical demonstrations. Suffice to say that the three examples match quite closely the threefold aspect of the root *s-f-r* as presented in *sefarim*: *sippur*, the spoken word, *sefer*, the written word,

[28] Δ3, 1014a26ff.

and *s'far* the numeric/logic aspect. The comparison is particularly apropos given that the context in both cases is about the definition of very similar principles.

There are two other triads which also may shed light on the range of meanings of the *sefarim*, one from the field of grammar, and the other from the field of arithmetic. The attributes of *litera* common among medieval Latin grammarians were three: *nomen*, which identified the letter for discussion; *figura*, the written shape; and *potestas*, the sound.[29] The last two may be seen to correspond with *sefer* and *sippur* respectively, but because in the Latin tradition the alphabet was not used to write numbers, a correspondence with *s'far* is not easily discernible.

Finally, Merlan considers that the three *sefarim* correspond to the three kinds of number found in Plotinus:[30] ἀριθμοί, the 'first and true numbers', ἀριθμοί ἀριθμητοί, numbers in countable beings, and ἀριθμοί ἀριθμοῦντες, things used to count, like a standard of measure. Once again, but now from the numeric aspect, a clear correspondence with the *sefarim* seems precarious, but in any case, I shall soon have an opportunity to return to late Platonic associations.

*

I have chosen to translate *sefarim* as 'count-modes', thinking of the various meanings of 'counting': the arithmetical one, as in enumerating, and also the narrative one, as in recounting a story. In fact, the word 'account' would also be a very suitable alternative, since it can mean: 1) a written account (*sefer*), 2) a tally (*s'far*), and 3) a narration (*sippur*). The basic structure of the paragraph would then read, 'God formed the thirty-two wondrous paths of wisdom in three accounts: writ, number and narrative.'

III. The Absolute Numerations – Sefirot

Much has been made of this word, and there are frequent claims of it being introduced to Jewish literature through the *SY*. For Baeck, who calls it a neologism, it replaces the customary *mispar* (number) in order to indicate

---

[29] Abercrombie, 'What is a "Letter?"', 59. These were an adaptation from the Greek Stoic triad: ὄνομα, χαράκτηρ, στοιχεῖον, see Robins, *The Byzantine Grammarians*, 54.

[30] VI. 6, 15. See Merlan, 'Zahlenlehre', 169.

that the numbers meant are not the numbers of mathematics.[31] According to Saʿadyā, the ten *sefirot* correspond to the ten Aristotelian categories (*maʿlūmāt*) and also to the ten commandments.[32]

If it is true that the concept of *sefirah* in the text is not limited to what we know as a number, the word itself is used in the Long Recension (§58b) with the meaning of 'count': 'the count (*sefirah*) of the universe is ten; the count of the year is ten…'[33] As observed by Vajda, it is a common term in the Talmud with the same meaning, and used notably as a singular only.[34] What the *SY* does is employ the term in a completely new way, to designate the first ten of the 32 'paths', called more specifically *sefirot beli mah*,[35] literally 'numerations without anything'. Saʿadyā translates as *aʿdād al-maḥẓurah*, 'enclosed numbers' or 'forbidden numbers', thus obviating any ambiguity inherent in the Hebrew term in favour of an 'arithmetical' reading. For Baeck and Merlan, once again, there is a clear relation here, also because they are ten, with later Greek metaphysics, and specifically with Proclus. *Sefirot beli mah* would accordingly refer to the ἀριθμοὶ ψιλοί or ἀριθμοὶ ἄνευ πραγμάτων, the 'unalloyed numbers' or 'numbers without things', or perhaps to the αὐτοτελεῖς ἑνάδες, the 'self-perfecting monads' located between the primal essence [*Urwesen*] and the Intelligible, mediating the transition from the original unity to multiplicity; *beli mah* corresponds quite literally to ἀμιγεῖς, 'pure' or 'unmixed'. Regarding the numbers as cosmic building blocks, Merlan refers to a quotation by Syrianus describing number as κριτικὸν κοσμουργοῦ θεοῦ ὄργανον, the 'decisive instrument of the world-creating deity.'

According to these German scholars, the high cosmological status of numbers can only be explained by the influence of Platonism and Neoplatonism, namely of Proclus and his immediate circle. Merlan

---

[31] L. Baeck, 'Die zehn Sephirot im Sepher Jezira', *Monatsschrift für Geschichte und Wissenschaft des Judentums* 78 (1934): 448–455; cf. Liebes, *Torat ha-yetsira*, 13–14.

[32] Saʿadia ben Yosef Gaon, *Commentaire sur le Séfer Yesira ou Livre de la création par le Gaon Saadya de Fayyoum*, ed. C. Mopsik, Partial reprint of the 1891 edn. (Alençon: Editions Bibliophane, 1986), 20–21.

[33] See Liebes, *Torat ha-yetsira*, 15; Hayman, *SY*, 173–4.

[34] G. Vajda, 'Recherches sur les commentaires du Livre de la Création', in *La consolation de l'expatrié spirituel: un commentaire sur le Livre de la Création (Sefer yeṣîrâh)*, ed. P. Fenton (Paris: Éditions de l'éclat, 2008), 24.

[35] See Hayman, *SY*, 65–6, for the alternative *belimah* and possible provenance.

observes that there is a possible Jewish connection, because Domninus, Marinus, Zeno of Alexandria and other close associates of the main later Neoplatonists were either of Jewish origin or were related to Jews.

Another notable reference to Greek sources is the suggestion by Liebes that the number of the *sefirot* can, in their close relation to the letters, be compared to the existence of ten Greek diacritic marks. It is perhaps due to this association that Liebes speaks of the ten *sefirot* as the 'inner aspect of the 22 letters.'[36] Now, any direct bearing of the Alexandrian prosodic marks on the origin of *SY* would make for a very early dating, but the farther back we move from the tenth century, the harder it is to justify the lack of mentions of the book in the intervening centuries.

There are certainly doctrinal parallelisms of various solidity along the lines mentioned above, but perhaps the most interesting effect of establishing the relation to Proclus is that it suggests a new possible *terminus a quo* for a treatise like the *SY*, i.e., the fifth century CE.[37]

This derivation of our book is also significant in terms of intellectual history. At the waning of the ancient world, and casting his shadow far into the distance, stands the figure of Proclus. By way of the writings of Dionysius the Areopagite, Proclus had an influence on the Christian Middle Ages, and through the *Sefer Yetsirah* he would also have made an enormous impact on later Jewish literature.

*

Once again, a sufficient characterisation of the *sefirot* is given by the *SY* itself. In §7 they are described as *ʿeser she eyn lahen sof*, 'ten that have no end' – they are ten endless valleys or chasms;[38] and in §16 the ten are named, they are, first, the Spirit of the Living God (*Ruaḥ Elohim Ḥayyim*); then the three elements wind, water, fire; and to complete the decad, the six directions of space: above, below, east, west, north, and south. Hayman sums up calling them 'pre-conditions for creation.' They seem to constitute a numeric middle realm upon which, as Plotinus says of numbers, 'beings

---

[36] Liebes, *Torat ha-yetsira*, 14.

[37] This is close to Vajda's suggestion of an approximate origin between 450 and 700; see Vajda, 'Recherches', 40.

[38] Cf. above, p. 161, the notion that every letter is a potential infinite.

have their "foundation, source, root and principle" (βάσιν δὲ ἔχει τὰ ὄντα ἐν αὐτῶι καὶ πηγὴν καὶ ῥίζαν καὶ ἀρχήν).'[39]

It may seem crucial for our enquiry to establish how numeric, just how arithmetical, the *sefirot* really are,[40] but this manner of asking is rather anachronistic, especially in the light of Chapter 2 above, where we have seen that 'number' itself was not in Antiquity quite the same as we understand today as number. So, in asking the above question, what we really want to know is just how close to the medieval concept of number was the concept of the *sefirot*. Saʿadyā for one identified them very clearly.[41] When it is said that '*SY* does not speak of the *sefirot* as of numbers in the full sense of the word,'[42] the answer should be that it actually does, but in the full ancient Pythagorean sense of the word. That is, unless we decide that Platonist and Pythagorean philosophers who elaborated on the cosmic function of numbers were not speaking of numbers either. The *SY* has to do with arithmetic somehow like the *Theologoumena arithmetica* does, that is, insofar as the metaphysical decad can be considered anything arithmetical. This is why I have translated *sefirot beli mah* as 'absolute numerations' and thus avoided rendering *sefirah* as plain 'number', but rather opted for an English word which is a clear cognate and yet unusual enough to be imbued with an altogether abstract meaning. A useful alternative to render *sefirot* would be a word related to 'counting', perhaps 'ten absolute counts,' thinking also of the Indo-European cognates, all derived from Lat. *computare*, as mentioned in a previous chapter.[43]

IV. The Twenty-Two Elemental Letters

It is a commonly held view that from the *SY* description of how the elemental letters interact within creation, arose the notion that 'the letters are not merely the tools of divine creativity', that 'they are treated in *SY* as the material stuff of reality.'[44] The ontological status of the letters as tools

---

[39] *Enneads* VI. 6, 9.

[40] Busi, *Qabbalah visiva*, 36, argues for a non-numerical meaning altogether.

[41] For an interesting Gnostic association, see M. Marcovich, *Studies in Graeco-Roman Religions and Gnosticism*, Studies in Greek and Roman Religion 4 (Leiden: Brill, 1988), 171–72.

[42] Dan, 'The Concept of Number', 13.

[43] See above, p. 107.

[44] Wolfson, 'A Philosophical Overview', 401.

is undecided: 'they were never created, and while they are the tools of all creation, they are conflated with the divine essence.'[45] It is then clearly imperative that we are watchful again and ponder what could have been the meaning of the expression 'material stuff of reality' in the age and context when the *SY* was written. The modern meaning of 'matter' itself is notoriously undecided and grievous in contemporary physics. So, were the elemental letters material? Certainly they were, if we care to discern properly the ancient meaning of the term – which shall be the aim of the next chapter.

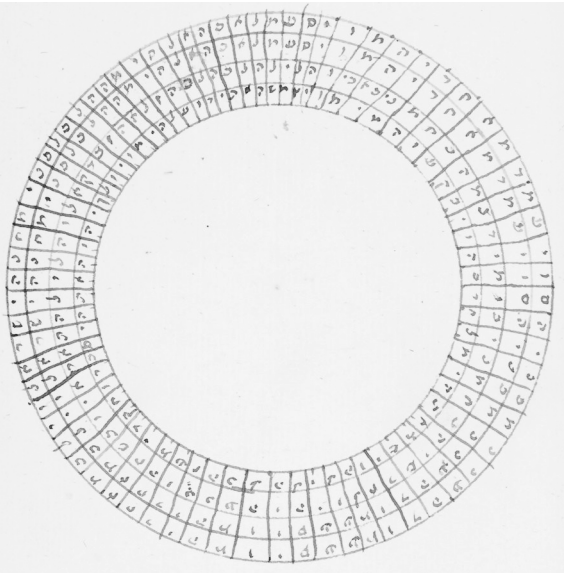
The best way to understand the place of these 'letters' in *SY* is to look at their description and functions in the book itself. §2 introduces the specifics of their threefold division in groups of 3, 7 and 12 letters – in this they remind us strongly of similar alphabetic classifications we have seen in Greek and Arabic; so much so that a correspondence between the seven Greek vowels and the seven double Hebrew letters has been explored in detail.[46] §19a introduces the divine actions with regard to the 22 letters: they are first carved and hewed, then they are combined, weighed and exchanged. The details of the combinations of the letters fill some very famous pages of *SY*, and the development of highly original illustrations in the editions is a testimony to the suggestive power of the text.[47] It must be noted that the verb translated as 'combine', *tsaraf* (a cognate of Ar. *ṣarf*, 'morphology', in grammatical terminology) has an important original meaning in metallurgy, where it means 'to smelt' or extract metal from its ore, and the noun *tsarifah* means also transmutation and alchemy.

---

[45] See C. Mopsik, *Le livre hébreu d'Hénoch, ou, Livre des Palais*, Collection « Les Dix Paroles » (Lagrasse: Verdier, 1989), 315.

[46] Y. Liebes, 'שבע כפולות בג"ד כפר"ת: על הריש הכפולה ועל רקעו של ספר יצירה (The Seven Double Letters BGD KFRT: On the Double REISH and the Background of "Sefer Yeẓira")', *Tarbiz* 61, no. 2 (AM 5752/1992 AD): 237–247.

[47] For many examples of diagrams which try to represent the oftentimes cryptic explanations in the text, see Segol, *Word and Image*, and Busi, *Qabbalah visiva*.



FOUR-ALPHABETS WHEEL. [48]

These elemental letters transform into each other, exchange places with one another, and in so doing they act like *signatures* of the three elements, the seven planets and the twelve universal divisions on every being. The wheel reproduced above is thought to be related to the four alphabetic wheels described by Judah ben Nissim (thirteenth century) as 'cosmic entities on whose movement depend both intelligible reality and the material world.'[49]

*

I had already had the opportunity to present a number of examples of the cosmogonic role of the letters of the alphabet in the Hebrew tradition, mostly from the rabbinic literature. A plausible historical development is that at some point in late antiquity, between the death of Proclus (485) and some decades before the publication of Saʿadyā's *Commentary* (931), the Jewish tradition which assigned to the Torah a key role in the creation of the world merged with insights from Platonic sources into the earliest form of *SY*.

---

[48] Bibliothèque nationale de France, Hébreu 825, 214r.

[49] See Busi, *Qabbalah visiva*, 45, 138.

B. The Title: 'Creation' or 'Formation'?

A question directly related to the nature of the 32 paths is the title of the book, why *yetsirah*? What sort of 'creation' is the one treated in this work?

The basic root *tsur* is very close to the Greek idea of ποίησις, a creation related to the arts, to forming and shaping,[50] like its Arabic cognate *ṣūra*. Maimonides, in his *Dalālat al-ḥā'irīn*, the *Guide for the Perplexed*, on occasion of distinguishing between *awwal* and *mabda'* – the 'principle' in its sequential or temporal meaning and its metaphysical meaning – [51] examines the various biblical verbs for creation and concludes that 'the word *yetsirah* corresponds to shaping and delineating' (*al-YETSIRAH innamā taqaʿu ʿalā tashkīl wa-takhṭīṭ*). I need hardly observe that the two words *tashkīl* and *takhṭīṭ* are common terms in the art of lettering, referring to the addition of diacritics and to the basic tracing of the letters.[52] To complete his explanation, Maimonides gives as a first example the expression *Yotser Or*, the 'Shaper of Light,' as the well-known epithet of God and the title of the prayer we have already discussed.[53]

Just as God is called in Hebrew *Yotser*, the divine Potter or Giver of Form, so in Arabic we find as one of the divine names *al-Muṣawwir*, 'He who gives form.' *Yetsirah* refers to a demiurgic creation for which a design with parameters and calculations and tools are needed.[54] In the Talmud we find the clearest association in *tsayyar*, 'the Designer', a divine name derived from the same root as *Yetsirah*,

מאי אין צור כאלהינו אין צייר כאלהינו

What is the meaning of there is no rock [*tsur*] like our God? There is no designer [*tsayyar*] like our God.[55]

---

[50] See above pp. 106 and 108. In Genesis Rabba 1:9, God is called an 'artist', *tsayyar*, with the same root.

[51] II.30, M. Maimonides, *Dalālah al-ḥā'irīn*, ed. S. Munk, Sifriyah Filosofit, Text in Judaeo-Arabic (Jerusalem: J. Junovitch, 5691 (1929)), 230–55.

[52] Let us also retain for the time being that *takhṭiṭ* is used in land surveying (*ʿilm al-misāḥa*) as well: *takhṭiṭ bi-al-taqāṭiʿ* means the 'tracing of the intersections,' referring to the initial laying of a square grid.

[53] See above, p. 109.

[54] Cf. Saʿadia, *Commentaire sur le Séfer Yesira ou Livre de la création par le Gaon Saadya de Fayyoum*, 13, 'A partir de dix *nombres primordiaux sans limite* et des vingt-deux lettres de l'alphabet hébraïque aux combinaisons non moins illimitées, le Créateur – ou plutôt le Potier (*yotser*) – construit comme à partir de briques, l'univers entier.'

[55] *bBerakhot* 10a:22; cf. *bMegillah*, 14a:20; see Busi, *Qabbalah visiva*, 3.

A less common version of the title is more specific, *Sefer Yetsirah Otiyot*, the *Book of Formation* of *Letters* – where the ambiguity in the preposition *of* is an attempt to reflect the original double entendre: it can mean 'the book where the letters are formed,' or 'the book describing how to give form with the letters.'[56]

It is worth keeping in mind, as a crucial cosmogonic reference in Genesis, that throughout the Hexameron only the verbs ברא *bara'* ('to create') and עשה *ʿasah* ('to make') are used, including the creation of man and woman on the sixth day.[57] It is only after the seventh day that the verb יצר appears: Adam is 'fashioned' (Gen. 2:7). The *Septuagint* keeps the distinction, using ἐποίησεν and ἤρξατο, and then in 2:7, ἔπλασεν for יצר. The *Vulgata* has *creavit, fecit* and *formavit* respectively.

An often mentioned variation of the title of the book is *Hilkhot Yetsirah*, the 'Laws of Formation,'[58] with the plural of *halakhah*, 'method', something to walk by, mirroring the etymology of Ar. *sharīʿa* and *sunna*. This alternative title is notably mentioned in bSanhedrin 67b, speaking of forbidden magic and sorcery practices: 'What is permitted *ab initio* is to act like Rav Ḥanina and Rav Oshaya: Every Shabbat eve they would engage in the study of the *halakhot* of creation, and a third-born calf would be created for them, and they would eat it in honor of Shabbat.' Even though this reference has been questioned,[59] it is important in that it opens a view onto the field of magic which has very often been associated with *SY*. This relation is only to be expected for the same reason that in Hermes are fused the patronage of language and of magic and occult arts. Magic as an art of *transmutation* of the immaterial will into material effects, has always something alchemical about it. In fact, in this light it is not difficult to see how the procedures applied by God to the letters sound very much like alchemical and magical operations with all that etching and weighing. Segol draws attention also to the architectural metaphors and the conceptions of creation by the creation

---

[56] Hayman, *SY*, 193.

[57] It is important to keep in mind that there are strong arguments for interpreting *bara'* as very close in meaning to *yatsar*. Wolde and Rezetko, 'Semantics and the Semantics of ברא', 11–12 list the meanings 'to cut a particular shape,' 'to fashion by cutting,' 'to shape.' It may be recalled at this point that type designers *cut* the letters of a font.

[58] Hayman, *SY*, 193–5.

[59] See J. Dan, *The 'Unique Cherub' Circle: A School of Mystics and Esoterics in Medieval Germany*, vol. 15 (Mohr Siebeck, 1999), 39–40.

of boundaries, particularly as occurring in Job 38, a very important biblical reference for the *SY* and its commentators.[60]

Finally, yet another title of the book, *Sod ha-ʿIbur*, the *Secret of Intercalation*, or *of Hebraization*, 'on which the whole world depends,' gives prominence to a procedure which is obviously related to the letter manipulations mentioned above.

C. Authorship and Conclusion

When thinking about the authorship, we refer again to §61, where Abraham appears as the adept who attains mastery of the book and thereby is rewarded. One first question that poses itself is 'why Abraham?' One powerful reason may be, always from the particular perspective of this work, that the three Abrahamic religions are called in Islamic tradition the 'religions of the book' or, perhaps more accurately, 'religions of the writing.' We have already seen in the second part of this work how intricately related are the alphanumeric doctrines of the Abrahamic religions, and they in turn with the Greek tradition. Abraham is a watershed figure for the religions of the Early and High Middle Ages, and the ascription of the book to him refers the reader to a very fundamental doctrinal core, properly esoteric, where theological differences are less urgent.

The closing scriptural citation Jeremiah 1:5, is remarkable on various grounds,

> 'Before I formed you (*etsur-kha*)[61] in the womb I knew you; and before you came forth out of the womb I sanctified you, and I ordained you a prophet unto the nations.'

The verse starts by using the root verb that gives title to the book, *tsur*, and making clear, after displaying all the rules of creation, that His giving form is not like man's, and it ends on a note related to the considerations just above, proclaiming the mission of Abraham *le-goyim*, for all the nations, not only for the Jews.

---

[60] See Segol, *Word and Image*, 174.

[61] Pronunciation as per the reading of the late Fr Abraham Shmuelof.

Let me conclude with a story which gives an idea of the reverence shown to the *SY* in the Jewish tradition.[62]

When Abraham was born, God consulted with the Sefer Yetsirah which said, 'Give (*me to him*)*.' So God handed it over to Abraham, who sat alone and meditated on Sefer Yetsirah, but he could not understand it at all until there came a heavenly voice and said to him, 'Do you seek to compare anything with me? I am One and I created Sefer Yetsirah and investigated it and made everything which is written in it. You cannot understand it on your own. Go to Shem and look at it together and understand it.' Immediately Abraham went to Shem his teacher, and sat down with him for three years, and they found out how to create the world.* (fol. 26r)

[62] Cited in A. P. Hayman, 'Sefer Yetsira (The Book of Creation)', *Shadow, The Newsletter of the Traditional Cosmology Society* 3 (1986): 20–38, from BL Add MS 15299 (the Ms is now available online).

Chapter 8

Alphabetic Consecration and Metaphysical Foundation

The ecumenical presence of Abraham as a patron figure of alphanumeric science is found, together with other aspects of the 'thirty-two paths of wisdom', in a most remarkable rite belonging to the liturgy for the dedication of a new church. The metaphysical associations of this rite, and in particular their relation to architectural imagery, will be explored in the following pages.

A. The *Abecedarium* in Church Dedication

The oldest known mention of this rite is found in *Ordo* XLI of the *Ordines Romani*, the early medieval Roman liturgical guidelines.[1] Here is this original succinct description from a seventh century manuscript:

Deinde incipit pontifex de sinistro angulo ab oriente, scribens per pavimentum cum cambuta sua abcdurium, usque in dextro angulo occidentalis; incipiens iterum similiter de dextro angulo orientalis abcdurium, scribens usque in sinistro angulo basilicae occidentalis.

Then the priest starts from the left eastern corner, writing the alphabet on the floor with his staff, until he reaches the right hand western corner, and then he starts again from the right hand corner on the east, writing the alphabet in the same way until he reaches the left corner of the western end of the church.

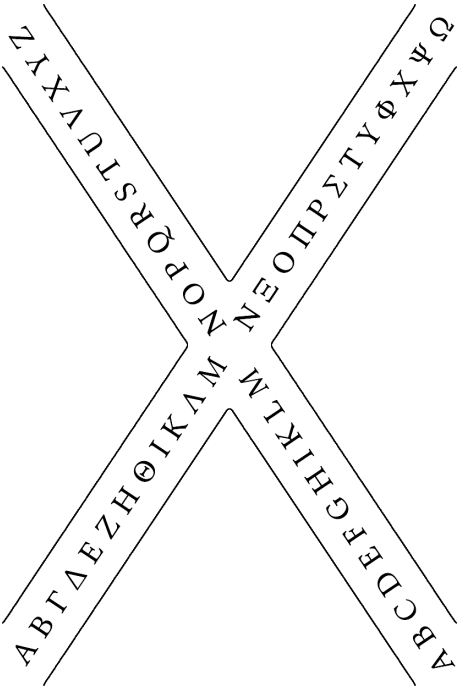
In later liturgical literature,[2] other details are added, like the fact that the

---

[1] M. Andrieu, *Les Ordines romani du haut moyen âge*, 5 vols., Études et documents 28 (Spicilegium sacrum lovaniense, 1956), 340–41. I am grateful to Berthold Kress for drawing my attention to this fascinating rite.

[2] See K. Schreiner, 'Abecedarium. Die Symbolik des Alphabets in der Liturgie der mittelalterlichen und frühneuzeitlichen Kirchweihe', in *'Das Haus Gottes, das seid ihr selbst': mittelalterliches und barockes Kirchenverständnis im Spiegel der Kirchweihe*, ed. R. M. Stammberger, A. Warnke and C. Sticher, Erudiri Sapientia 6 (Walter de Gruyter,

letters are traced on two previously laid stripes of ashes, or that one of the alphabets is the Greek alphabet,[3] and in some manuals there are graphic aids for the officiants, like the following diagram,



AFTER AN 1859 PONTIFICAL[4]

In general, it is clearer in the later descriptions that, as in the illustration, the tracing of the two alphabets is done *in modum crucis*, and more specifically in the form of a decussate crux (*crux decussata*). The origin of the word *decussis*, meaning the decad, or simply 'ten', is particularly significant in our context. It comes from the compound *decem* and *as*,

---

2007), 143ff. for the most recent and exhaustive treatment and references.

[3] See W. Berschin, *Griechisch-lateinisches Mittelalter: Von Hieronymus zu Nikolaus von Kues* (Bern/München: Francke Verlag, 1980), 37, who calls this 'most significant testimony of the medieval keenness to relate the Greek language to the Latin liturgy,' and who suggests a direct relation to the 'ancient doctrine of the στοιχεῖα.'

[4] *Pontificale Romanum Clementis VIII ac Urbani VIII jussu editum et a Benedicto XIV recognitum et castigatum* (Paris: A. Jouby, 1859), 217. Cf. also G. De Rossi, 'Degli alfabeti, che il vescovo scrive sulla croce decussata nel consecrare le chiese', *Bullettino di Archeologia Cristiana* (Roma), 3rd ser., 6, no. 4 (1881): 140–146.

'ten units'. Vitruvius (3, 1) explains: *ex singularibus rebus, quae μονάδες apud Graecos dicuntur, perficitur decussis*, 'the decad is brought to completion by the single entities called μονάδες in Greek.' Because ten was represented by the crossing lines, the symbol X came to be another meaning of *decussis*, whence St Andrew's *crux decussata*.

In the dedication rite there is thus a convergence between the alphabet and the decad, the twenty-something letters and the ten first numbers, very much like the thirty-two paths of wisdom mentioned in *Sefer Yetsirah*. This combination summarises the form of the rite: the two alphabets – that is the elements – written on the pattern of a cross or a Greek uppercase *chi*, X. This form is still in use today with some simplifications,[5] but the origin and meaning of the rite have long been a subject of speculation.

The shape of the *chi* has been associated, even from the early Church Fathers, with the important cosmological mention of this same pattern in *Timaeus* (36b), with all its Pythagorean echoes, where the two circles of the World Soul are said to rotate on crossing orbits, similar to the way in which the ecliptic and the celestial equator cross in the sky.[6] Such astronomical associations hark back to the art of gnomonics, which together with *aedificatio* and *machinatio* formed the three parts of *architectura*.[7] In the consecrated church, the temple of the solar Word of God, the letters of foundation – in the most literal sense – reenact as it were their very first archaic meaning of 'shadows cast on the sundial.' They also illustrate the similar conjunction of meanings in the word ἀνάλημμα: 'a sundial,' 'the geometric diagrams at the basis of the sundial,' and 'a substructure.'[8]

Another meaning ascribed repeatedly to the bilingual alphabetic cross over the centuries is the union of different peoples under the Christian faith, like the two Testaments of the Bible, or like the Eastern and Western churches.[9] It is following this same reading that the layer of ashes (or

---

[5] See A.-G. Martimort, 'Le nouveau rite de la dédicace des églises', *La Maison-Dieu* 70 (1962): 15–16.

[6] Cf. Schreiner, 'Abecedarium', 152–3.

[7] I. Velázquez, 'Léxico y lenguaje de la ciencia y la técnica en el mundo romano. En torno al léxico de la construcción', in *Ciencia y tecnología en el mundo antiguo*, ed. T. Nogales Basarrate and P. Fernández Uriel, Monografías emeritenses 10 (Mérida: Museo Nacional de Arte Romano, 2007), 207–208.

[8] Cf. *ibid.*, 210.

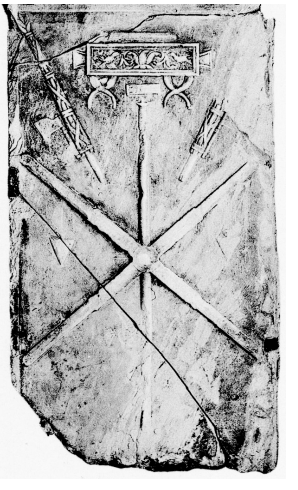
[9] Schreiner, 'Abecedarium', 160, 171–2.

often sand and ashes) upon which the alphabets are inscribed is identified with Abraham, the biblical Prophet who says 'I am nothing but dust and ashes' (Gen. 18:27). Once again, it is as if in his intimate association with the letter-elements, and in this strange rite, the decadic sign represented a fundamental layer shared between Abrahamic faiths.

Regarding its provenance, it is to be noted first that this ceremony does not form part of the Byzantine dedication rites, and that it only appears in the Roman record from around the eighth century. Some authors have established the interesting parallels with the rich Roman literature and practice of land surveying which I shall treat in the following section.

I. The Roman Gromatici

De Rossi gives references to the strikingly similar consecratory rites performed by Greek and Roman augurs when they were establishing a τέμενος, practices later reproduced by the Roman *agrimensores* or *gromatici*[10] upon the foundation of cities and any establishment of boundaries, sacred or profane.[11]



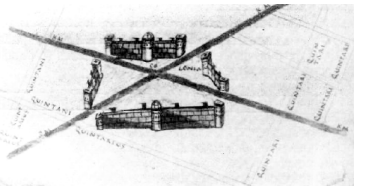
DEPICTION OF A GROMA ON A TOMBSTONE[12]

[10] So called after the main instrument of their craft, the *groma*, used for triangulation. The word *groma*, quite significantly here, 'is derived from γνῶμα, a by-form of γνώμων,' related to the στοιχεῖα, as we have seen, from the earliest sources; see O. A. W. Dilke, 'The Roman Surveyors', *Greece & Rome* 9, no. 2 (October 1962): 176.

[11] De Rossi, 'Degli alfabeti', 142.

[12] Original at the Museo Civico, Ivrea. Reproduced in *Jahrbuch des Deutschen Archäologischen Instituts*, XVI, (1901), Tafel II.

The drawing of the two fundamental axes, *cardo maximus* and *decumanus maximus* naturally formed the decussate cross,[13] which is of course the same Greek capital X of Χριστός. In this context and in view of my further observations below, the striking resemblance between the graphical projection of the groma and the labarum (☧) should not be left unmentioned.



FROM HYGINUS GROMATICUS[14]

The measures and other terrain features established by the land surveyors were marked and codified with special signs called *casae litterarum*, which comprised the entire Greek and Latin alphabetic series.[15] The relation between language and temple consecration is firmly attested, with several examples, among which this by Servius:

loca sacra, id est ab auguribus inaugurata, effata dicuntur.

Sacred places, that is those inaugurated by the augurs, are said to be 'uttered'.[16]

This certainly is in line with the basic Hermetic task of signposting and dividing the land,[17] and thus taking possession of it, and with his patronage of language. In fact, the act of the dedication has been explained as an

---

[13] The word *decumanus* itself comes from *decem*, because the *decumanus* forms a figure of ten, X, with the *cardo*. This etymology is enough to disprove claims against a relation between the *abecedarium* and the surveyors' work based on the narrow angle at the crossing of the lines.

[14] M. Clavel-Lévêque et al., trans., *Corpus Agrimensorum Romanorum IV. 1. Hygin l'arpenteur. L'établissement des limites* (Luxembourg: Office des publications officielles des communautés européennes, 1996), 96.

[15] See, J. B. Campbell, *The Writings of the Roman Land Surveyors* (London: Society for the Promotion of Roman Studies, 2000), 232ff. A remarkable contemporary analogue is found in the 'corner stakes' which to this day are marked by builders using letters and numbers.

[16] *Ad Aeneid.*, III, 463.

[17] See above, p. 138.

apotropaic ritual, given the conjuring power of the alphabet, followed by *dedicatio*, a 'spelling', and *possessio*.[18] This 'inaugural' aspect of the rite has well-documented parallels in catechetical and baptismal rites, in which the importance of the 'first letters', often 'abbreviated' as AΩ, is a constant.[19]

*II. Christening the Land: mensuratio/*γεωδαισία

Even further on the Hermetic association, the establishment of *limites* was considered as the most important among all the rites or actions related to measures (*inter omnes mensurarum ritus sive actus eminentissima traditur limitum constitutio*),[20] but these 'limits' are said to be of a liminal nature (*limites autem ab liminibus vocabula acceperunt*), and they are identified with the concept of *signum*, which 'has no parts' and is the 'beginning and end of every observation of measures.'[21] These 'signs' were laid out on the terrain by centuriation (in Latin *centuriatio* or, more usually, *limitatio*) a method of land measurement used by the Romans,[22] consisting of the regular division of the surveyed land in a square grid pattern, *stoichedon* style.

It should also be noted that this *division for dominion* of space is the static complement of the kinetic *division for orientation* we mentioned earlier. While the static division is based on the square and the grid, the dynamic division is based on the circle and angular measurements.[23]

---

[18] Martimort, 'Le nouveau rite de la dédicace des églises', 20. For the apotropaic aspect, see also Schreiner, 'Abecedarium', 155ff.

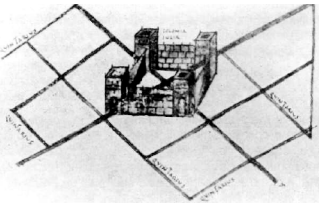
[19] Cf. G. De Rossi, 'Dell'alfabeto nei monumenti cristiani', *Bullettino di Archeologia Cristiana* (Roma), 3rd ser., 6, no. 4 (1881): 135, 'until the eleventh century it was customary to solemnly show the catechumens the monogram with the two letters AΩ, to begin their instruction in the elements of the catechism.'

[20] Clavel-Lévêque et al., *Corpus Agrimensorum Romanorum IV. 1*, 112; Campbell, *Writings of the Roman Land Surveyors*, 135.

[21] *Ibid.*, 208. The liminality of this craft is already evident in its being used by Aristotle as one of the examples when discussing the existence of 'intermediaries'; *Metaph.* 997b27.

[22] Apparently of Etruscan origin, see O. Dilke, *Greek and Roman Maps: Aspects of Greek and Roman Life* (London: Thames / Hudson, 1985), 18.

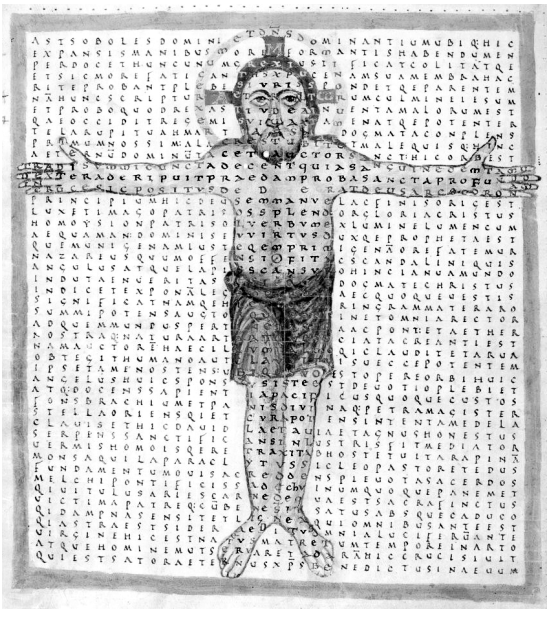
[23] See above p. 208.



LIMITATIO, FROM HYGINUS GROMATICUS [24]

1. Rabanus Maurus

Coming back to the church dedication and an early medieval Christian association, an immediate striking visual parallel is found in the lattice-work of Rabanus Maurus' (d. 856) *Liber sanctae crucis*, where letters, rhythm, Christic motifs and a rigorous grid pattern combine in what must count as one of the summits of alphanumeric art.[25]



AST SOBOLES DOMINI, LIBER SANCTAE CRUCIS [26]

[24] Clavel-Lévêque et al., *Corpus Agrimensorum Romanorum IV. 1*, 97.

[25] For the title and a 'theological' appraisal, see G. d'Onofrio, 'La teologia della croce in epoca carolingia', in *La croce, Iconografia e interpretazione, Atti del Convegno Internazionale di Studi*, ed. B. Ulianich, vol. 2 (Napoli: D'Auria, 2007), 271–320, who calls the *Liber* 'a series of symbolic-religious meditations.'

[26] Bibliothèque nationale de France, Latin Ms 2422, f. 3v.

All the above makes it quite easy, in the context of this work, to see how some aspects of the Roman surveying tradition could have been assimilated into this rite of the early church, in a process comparable to the assimilation of the patterns of Roman law into canon law. In fact, it may have been during the times of Rabanus, by the end of the eighth century, when the *abecedarium* rite was first performed, but regarding its origin, and in spite of any Greek, Etruscan or classical Roman associations, the decisive argument is a linguistic one.

B. The Celtic Connections

Going back to the earliest textual occurrence of the *abecedarium* rite, and as pointed out by Andrieu,[27] there are two key terms used in *Ordo* XLI which are of clear Celtic origin: the officiant is said to trace the *abcdurium* (or *abcturium*, instead of the usual *abecedarium*) with his *cambuta* (instead of *baculus* for the bishop's crozier). A more recent study has confirmed, upon examination of a manuscript dating from the end of the ninth century,[28] the similarities and Gallican origin of the rite, and its 'baptismal' character, including exorcisms, aspersion, unction, and thus also confirming an ancient interpretation of the rite as being related to the catechetical teaching of the *initia et rudimenta doctrinae sacrae*, the 'principles and rudiments of sacred doctrine' symbolised by the letters.[29] This is in fact directly related to the text of Heb. 5:12, where the faithful are said to need instruction in τὰ στοιχεῖα τῆς ἀρχῆς τῶν λογίων τοῦ Θεοῦ 'the letter-elements of the principle of the oracles of God.'

I. Eriugena

It is in the light of this specifically Irish connection that the figure of John Scotus Eriugena comes to our attention. Eriugena (c. 815–c. 877) is known as the first since Saint Augustine to introduce the ideas of Neoplatonism from the Greek into the Western European intellectual

---

[27] Andrieu, *Ordines romani*, 319–20.

[28] D. Barbet-Massin, 'The Rite of Church Dedication in Early Medieval Ireland and the Dedication Scheme in the Angers Manuscript 477', *Peritia* 27 (2016): 11–30.

[29] See C. Vogel and R. Elze, *Le Pontifical romano-germanique du dizième siècle*, 2 vols., Studi e testi 226 (Biblioteca apostolica vaticana, 1963), 97–8.

tradition, where they were to have a strong influence on Christian theology. His *Periphyseon* or *Division of Nature*, a work which 'synthesizes the philosophical accomplishments of fifteen centuries,' has been called the final achievement of ancient philosophy.[30]

In a general way, the *logos* in the works of Eriugena has been characterised as 'the unitary conglomerate of the universe in its *causae primordiales*,'[31] but even more particularly, his doctrine of the elements in their cosmogonic role has been studied minutely by Frances Yates in the context of another major exponent of an alphanumeric cosmology, Ramon Llull (c. 1232–c. 1315).

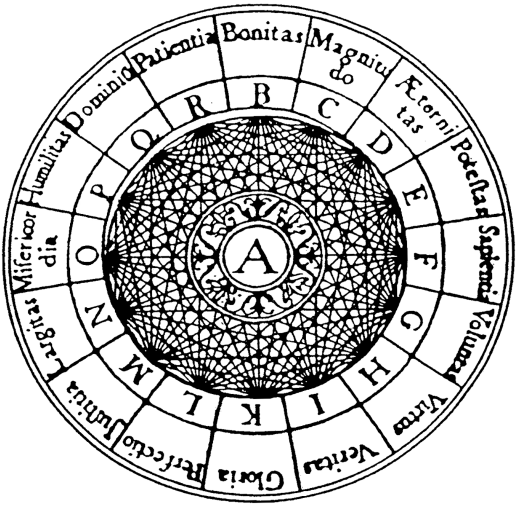
Llull's diagrams (remarkably similar to some Kabbalistic devices), in which the letters of the alphabet symbolise the divine attributes and encompass in their combinations all possible knowledge, appear at first sight like a perfect representation of the combinatorial 'skill' (the *ars*) whereby the Artist of the *Sefer Yetsirah* makes the world. However, one searches his works in vain for a cosmological doctrine that corresponds to this visual impression, and the use of the letters seems restricted to that of a conventional code to be deciphered. Given Llull's background, and especially his acquaintance with Jewish and Muslim doctrines, I find it hard to believe that some kind of real alphanumeric cosmology does not underpin his diagrams, but a thorough examination of this topic exceeds the boundaries of my current research.[32]

---

[30] G. B. Burch, *Early Medieval Philosophy* (New York: King's Crown Press, 1951), 5.

[31] G. Buchwald, *Der Logosbegriff des Johannes Scotus Erigena* (Leipzig: J. Drescher, 1884), 18.

[32] Notably, Idel and Djebbar have argued respectively for Jewish and Islamic sources of Llull's combinatorial art, see M. Idel, '*Dignitates* and *Kavod*: Two Theological Concepts in Catalan Mysticism', *Studia lulliana* 36, no. 92 (1996): 69; and A. Djebbar, 'Las prácticas combinatorias en el Magreb en la época de Ramon Llull', *Quaderns de la Mediterrània*, no. 9 (2008): 322–3. See also D. Urvoy, '¿En qué medida se vio influido el pensamiento de Ramon Llull por su relación con el islam?', *Quaderns de la Mediterrània*, no. 9 (2008): 287–295, who points out significant connections with the *Budd al-ʿārif* (*The Object of Worship of the Gnostic*) of Ibn Sabʿīn.



FROM LLULL'S ARS COMBINATORIA

As suggested by Yates, there is a Neoplatonic influence clearly at play under Llull's 'natural logic', based as it is on the elemental structure of the created world. This influence is spelled out in the role assigned by Eriugena to what he calls the 'universal elements,' *universalia elementa quae Graeci catholica στοιχεῖα vocant*.[33] These 'elements', immediate effects of the primordial causes, are the four elements, though not in any corporeal form or as the four elemental qualities, but existing *per se*, universally diffused in a mysterious and incomprehensible way, and they correspond to the *firmament* of Genesis in that they *separate*, create a boundary, between the supernal waters (the primordial causes) and the lower waters (elemental qualities).[34] The universal elements (καθολικὰ στοιχεῖα) are a sort of mediator (*medietas quadam*) between the primordial causes and the composite bodies. They come together and accord with one another (*conveniunt et concinunt*) and Eriugena explains how this is so because the meaning of στοιχείωσις is διατύπωσις, *hoc est, conformatio* – the 'elementation' is a setting into forms, a kind of 'typing' of reality – in what can be easily read in a typographic sense.[35] Not surprisingly,

[33] F. A. Yates, 'Ramon Lull and John Scotus Erigena', *Journal of the Warburg and Courtauld Institutes* 23, nos. 1/2 (1960): 5, 9.

[34] *Ibid.*, 9.

[35] *Periphyseon*, 3, 706c; page numbers follow the *Patrologia*, the text is Jeauneau's

we are finding here again the images of dance and acoustic harmony that we had encountered in the first chapter of this research.[36] And echoing even more the attributes of the στοιχεῖα discerned by the grammarians, Eriugena explains that these elements must be affirmed to be luminous, or indeed, light itself, in that through their mediation all bodies are made visible.[37] Of particular interest is his insistence on the reality of this imagery: no allegory is meant in these, but 'only a direct physical regard' (*nuda solummodo physica consideratio*).[38]

To return to the opening lines of this section, it should be noted that in this metaphysical continuum of elements of various degrees – overlapping and interpenetrating 'layers' of separating yet mediating elementary realms – one can discern the profound imprint of a worldview found in other manifestations of the Celtic mentality. It is well known in theological studies that one of the hallmarks of Celtic Christianity is its emphasis on the metaphysical continuity between heaven and earth; what has been called, significantly in our context, the 'St John tradition.' The doctrines of Pelagius (another Irishman; d. c. 420), like the convoluted patterns of Celtic graphic arts, have long been considered representatives of a theology in which the emphasis is on the immediacy of God in all created life.[39] Eriugena's metaphysics, according to which the divine goodness is not only the essence, but also the substance of creation,[40] fits neatly into this doctrinal line, and it is little wonder that the interplay of the elements in his expositions has been likened to the sinuous patterns of the masterpieces of Celtic illumination.[41]

---

as in Gorlani's edition. See above, p.218, for the slightly different association between cosmogony and type cutting, based on Hebrew semantics.

[36] See above, p. 10.

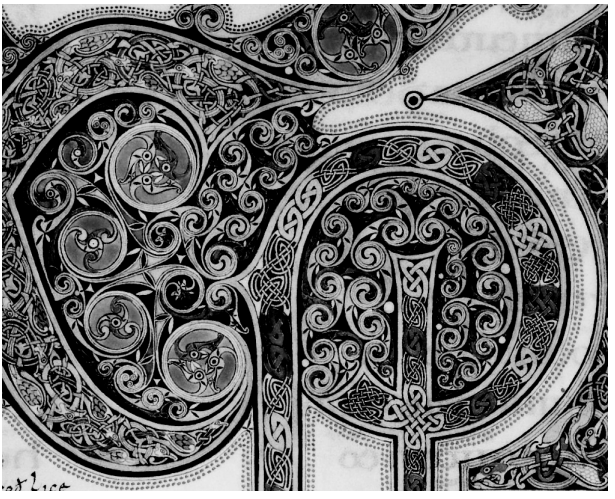
[37] *Ibid.*

[38] *Periphyseon*, 3, 707b.

[39] J. P. Newell, *Listening for the Heartbeat of God: A Celtic Spirituality* (London: SPCK, 1997), 32–3, 36.

[40] *Periphyseon*, 681D.

[41] Yates, 'Ramon Lull and John Scotus', 10.



FROM THE LINDISFARNE GOSPELS, CA. 700 AD [42]

C. Psellos: Letters and Matter

As I bring to completion the account of Christian alphanumeric literature in the high middle ages, the examination of the most important related work in the Byzantine tradition brings me to an unexpected passage echoing the Celtic doctrine just mentioned, and shedding light on a new aspect of the intermediary elemental realm.

The Byzantine work is the Ἑρμηνεία περὶ τῶν εἰκοσιτεσσάρων στοιχείων, *Interpretation of the twenty-four letters*, by Michael Psellos (d. 1078).[43] In spite of the title, there is not much of interest for us in the treatise itself, since it is devoted to a letter by letter elucidation rather than discussing the nature of the alphabet as a whole,[44] but following immediately after this treatise there is the following four-line *Fragmentum de materia*,

---

[42] British Library, Cotton MS Nero D IV, f. 29r, detail.

[43] Treatise 36 in M. Psellus, *Philosophica minora*, ed. J. Duffy (Leipzig: Teubner, 1992), 120–41.

[44] There is a useful overview in K. Ierodiakonou, 'The Greek Concept of Sympatheia and Its Byzantine Appropriation in Michael Psellos', in *The Occult Sciences in Byzantium*, ed. P. Magdalino and M. Mavroudi (Geneva: La Pomme d'or, 2006), 110–17.

Ἡ ὕλη μήτηρ τῶν εἰδῶν καὶ τιθηνὸς λέγεται· καὶ γὰρ καὶ αἱ τῶν ζῴων μητέρες κατὰ τὸν λόγον τὸν τὸ ‘τί ἦν εἶναι’ σημαίνοντα τοὺς λόγους ἅπαντας ἔχουσι τῆς γενέσεως διὰ τῶν παρὰ τῶν ἀρρένων καταβαλλομένων γονῶν ἐν τοῖς κατὰ τὰς μήτρας ὑγροῖς.

Matter is called the mother and nurse of forms, because just like it, the mothers of living beings too contain all the analogies (λόγους) of generation, according to that analogy which betokens the essential quiddity and by means of the male sperm cast in the humidity of the womb.

I shall try to make this clear by paraphrasing and explicating the condensed meaning:

1–Matter (which is in Greek something similar to timber, and also like the living wood from where the timber is extracted) is like a mother and a nurse, meaning that it not only originates but also nourishes and sustains.

2–Why is this comparison valid? Because there is something in which matter resembles a mother: mothers have in them all the ‘words’ (the term is *logos*) of generation. But the best translation here may be ‘patterns’ – mothers hold in themselves all the patterns of their future progeny, just as matter contains the patterns, words, ratios, analogies of the future beings. Obviously, the matter referred to here is not a primordial chaotic substratum but some sort of in-formed primary constituent.

3–Each being has a quiddity, an essential what-ness which is revealed or signified (σημαίνεται) by a pattern or word. When we say that the mothers, like matter, hold the patterns of every future progeny, it is understood that these patterns refer to every individual pattern which signifies the essence of a being. Matter is thus conceived as a semantic repository.

4–Finally, it is made clear that mothers perform their ‘metaphysical’ task of individuation by the ordinary means of animal reproduction between male and female.

It is well known that the Latin word *materia* itself derives from *mater*, mother,[45] as if prefiguring in its derivation the understanding laid bare by Psellos, and there is a wealth of literature, especially in mythical narratives, where the original cosmic substance is conceived as a benign motherly figure; what is of special note here is the fact that this compressed passage appears almost as a coda to the treatise on the twenty-four letters. Indeed, the last lines of the *Interpretation* are about intellectual motherhood: ‘I

[45] Originally, the trunk of a tree which gives birth to offspring.

have engendered many times many other discourses (λόγους), but I never begot one son like this one, for which I endured birth-pains and whom I gave birth to in one single night… And we shall hold onto our own progeny…'[46] And immediately after that follow the lines on the universal motherhood of matter, where the λόγος plays such a crucial *defining* role. Our final witness to the doctrinal alphanumeric developments is in fact related to the numerical aspect of the λόγος.

I. Aquinas and the Second 'Signified' Matter

The *locus classicus* for the maternal aspect of matter as the receptive pole of creation is *Timaeus* 50d3, προσεικάσαι πρέπει τὸ μὲν δεχόμενον μητρί – 'it behoves to compare the receptive to a mother.' This passage and other related epithets found in *Timaeus* were translated and commented upon by Calcidius, who gives a list of alternative names for the same reality,

quam modo matrem, alias nutriculam, interdum totius generationis gremium, non numquam locum appellat quamque iuniores hylen, nos silvam vocamus	What he now calls 'mother', in other places 'nurse', and sometimes the 'womb of all generation', or even 'place', and what later thinkers call *hyle*, we call 'wood'.[47]

The bewildering semantic shifts of the terms for matter through the middle ages have been well charted and need no retelling. Charlton gives a pithy account,[48] including the importance of the role played by Calcidius' work until the second half of the twelfth century, when the translations of the Aristotelian physical and metaphysical texts started circulating in Europe.[49] By examining the text of the *Timaeus* and its commentaries, Brisson has shown in every detail how the aspects of the primordial substrate include always a tension between the constitutive (mother, nurse, wood) and the spatial (place, receptacle – ἐκμαγεῖον), and he argues for the necessity to preserve this tension and ambiguity within the expression, to

---

[46] 36.637–42.

[47] Calcidius, *On Plato's* Timaeus, ed. J. Magee, Dumbarton Oaks Medieval Library (Harvard University Press, 2016), 273; the references are scattered through *Timaeus* 49a–52b. Cf. also Brisson, *Le même et l'autre*, 208ff.

[48] W. Charlton, *Aristotle's Physics: Books I and II* (Oxford University Press, 1983), 142.

[49] See *Encyclopedia of Medieval Philosophy: Philosophy Between 500 and 1500*, ed. H. Lagerlund (Springer, 2010), s.v. 'Form and Matter'.

try to honestly grasp 'that something whose existence we must postulate, but whose ontological nature is so difficult to determine.'[50]

It is no wonder that Aristotle's writings are particularly abstruse on this point, and just as he posited two kinds of matter, a sensorial one and an intellectual one (ὕλη νοητή – *Metaph.* 1036a9)[51] there were many others who developed alternative nomenclatures. Iamblichus, for instance, speaks of three kinds of matter: sensorial, mathematical and intellectual.[52] Proclus reaches the summit of elaboration of this doctrine with ten hierarchical levels according to the interplay between the Limited (Form) and the Illimited (Matter). What all doctrines of matter have in common through the centuries is that they are always forced to fill a primordial gap between the intelligible forms and the spatial receptacle, and to do it by positing some sort of intelligible matter in whose image the sensorial world will be modelled.[53]

In the thirteenth century, when Aquinas was writing his *Summa Theologiae* (ca. 1265–1274), his preferred solution to the same conundrum was to explain first that *materia est duplex*, 'matter is dual': *communis, et signata vel individualis*, 'common' and 'delimited/demarcated/designed' or 'individual.'[54] Then he speaks also of two kinds of *materia*: *sensibilis aut corporalis* and *materia intelligibilis*, which is said to be 'substance inasmuch as it is subject to quantity.'[55]

So we have four kinds of matter, *communis, signata, sensibilis* and *intelligibilis*, which are paired up in an increasingly subtle scheme of 'common sensible', 'signate sensible', 'common intelligible' and 'signate intelligible',[56] but we want to dispense with the subtleties now, and to focus on the signate intelligible matter.

---

[50] Brisson, *Le même et l'autre*, 218.

[51] Cf. Annas, *Metaphysics M and N*, 33, who calls this an 'oddity in Aristotle's thought.'

[52] Brisson, *Le même et l'autre*, 241.

[53] *Ibid.*, 243.

[54] The translation variations are meant as references to the Hermetic and Roman surveying texts discussed in previous pages.

[55] *Summa*, Iª q. 85 a. 1 ad 2.

[56] Cf. R. Pasnau, 'Abstract Truth in Thomas Aquinas', chap. 3 in *Representation and Objects of Thought in Medieval Philosophy*, ed. H. Lagerlund, Studies in Medieval Philosophy (Ashgate, 2007), 40.

This 'dimensioned' or 'designated matter', called elsewhere *materia sub quantitate determinata*,[57] is the *principium individuationis*, the principle of individuation in which there is a clear analogue of that λόγος ὁ 'τί ἦν εἶναι' σημαίνων, that 'ratio signifying the quiddity' of a future being, which dwells in the motherly womb of universal matter.[58] It is also the intermediate level, the interface which makes possible the total reciprocity of the encounter between intelligible and sensorial matter.[59] One way of realising how it has to do with this current enquiry is afforded us by the explanation, from a leading Thomist philosopher, that: 'intelligibility is *the ground of possibility*, and possibility is the possibility of being.'[60] It is easy and seemingly natural to conceive of intelligence, in its relation to existence, as a net cast from above, but perhaps what we encounter in this basic notion of the 'measure of the land' is the complementary image from below, the laying of a grid in preparation for the building of existence.

D. Dante and Hildegard

To conclude this chapter, I would like to observe how the imagery explored in all these authors is always not only orbiting, as it were, the central alphanumeric concept of λόγος in most of its aspects, but also in particular, and as we had found in the previous chapter, its intermediary and *crucial* function in the cosmopoiesis, the making of the universe. This constructive function seems to be strictly liminal in a very practical sense: it is not so much architectural as cadastral, i.e. related to the land surveying needed to lay the foundations of a new building – it is a strictly intermediary stage, like the transference of a design to the terrain, which partakes necessarily of a logical, creative process, and also of practical, material actions (often involving real timber). But rather than continue to establish the many

---

[57] *De Principio Individuationis*, Textum Taurini, 1954. This work is now attributed to the fourteenth century Dominican Thomas of Sutton.

[58] An important caveat regarding the concept of quantity is given in W. Smith, *The Wisdom of Ancient Cosmology: Contemporary Science in Light of Tradition* (Oakton, VA: Foundation for Traditional Studies, 2004), 28–9, where this doctrine is approached from the point of view of contemporary physics.

[59] Brisson, *Le même et l'autre*, 265.

[60] B. Lonergan, *Verbum: Word and idea in Aquinas*, vol. 2, Collected Works of Bernard Lonergan (University of Toronto Press, 1997), 57, my italics.

correspondences which the reader may already be discerning between the previous sections, I should like to finish with examples taken from two of the most important Christian literary monuments of this age.

The first is from Dante's *Commedia*, significantly called 'the *Summa* in verse' in relation to Aquinas,[61] as a literary representative of the same tendency of the age to bring together many tributaries from different traditions into a single coherent and comprehensive whole. Among the verses of its last chant, we have a vision of the world as a book:[62]

Nel suo profondo vidi che s'interna,
legato con amore in un volume,
ciò che per l'universo si squaderna:
sustanze e accidenti e lor costume
quasi conflati insieme, per tal modo
che ciò ch'i' dico è un semplice lume.

In its profundity I saw how is collected
and bound with love into one single volume
what lies scattered through the universe:
substances, accidents, their dispositions
as if together joined, in such a way
that what I tell is only a faint reflection.

It has to be noted that the chant begins with an invocation to the Virgin Mary, in which she is addressed as *Vergine Madre, figlia del tuo figlio,/ umile e alta più che creatura,/ termine fisso d'etterno consiglio*, 'Virgin Mother, daughter of your son,/ more humble and yet higher than any creature,/ fixed limit of the eternal counsel.' That is, she reunites the polarities in a dumbfounding unity, so much so that perhaps 'we could say of her, without lying, that she is some sort of form beyond vision or

---

[61] H. S. Bowden, *Dante* (London: Catholic Truth Society, 1901), 30, reports this saying, perhaps referring in general to A.-F. Ozanam, *Dante et la philosophie catholique au treizième siècle* (Paris: Lecoffre fils et Cie., 1872).

[62] *Paradiso* XXXIII, 85–90; trans. Mandelbaum with a few changes. For the topic of the cosmic book, which runs like an undercurrent through this work, see the Conclusion, p.271.

shape, that she is all-receptive, and that she shares in the intellectual in the most perplexing way.'[63]

The second example is from *O splendidissima gemma*, one of the hymns of Hildegard of Bingen (1098–1179), who furthers the identification between the Virgin and the attributes of the intermediary undefinable matter which encloses all the definitions:

> *Hoc Verbum effabricavit tibi Pater hominem,*
> *et ob hoc es tu illa lucida materia*
> *per quam hoc ipsum Verbum exspiravit omnes virtutes,*
> *ut eduxit in prima materia*
> *omnes creaturas.*
>
> The Father crafted for you this Word into a man,
> and so you are that luminous matter
> through which this Word breathed forth all virtues,
> when in the primal matter
> he brought forth all creatures.[64]

The epithet *lucida materia*, adding the aspect of light to the 'second matter', is found in another hymn as *aurea materia*, 'golden matter'. In this little sample of Mariology, outlining Mary's essential role in the process of creation,[65] we have the fully Christian expression of a very developed alphanumeric cosmology:[66] it is only the luminous matter, Mary,[67] as only the alphanumeric series of designating universal elements, which can make the perfection of creation possible.

---

[63] This is the description of the 'mother and receptacle of the sensorial', αἰσθητοῦ μήτηρ καὶ ὑποδοχή, in *Timaeus 51a*.

[64] Hildegard of Bingen, Symphonia*: A Critical Edition of the* Symphonia Armonie Celestium Revelationum, ed. B. Newman, Cornell Paperbacks (Cornell University Press, 1998), 114–15; trans. Newman with minor modifications.

[65] See P. Schäfer, *Mirror of his Beauty: Feminine Images of God from the Bible to the Early Kabbalah* (Princeton University Press, 2018), 165.

[66] An interesting comparison between the Jewish doctrine of the *shekhinah* and the Marian attributes is found in *ibid.*, 169.

[67] Or the 'matrix of light' as in the alternative translation in Hildegard of Bingen, *Symphonia*, 115.

Chapter 9

Islamic Systematisation and the Sublime Letters That We Were

The three witnesses in this final chapter retrace the trajectory of our concept along lines which have become familiar, as they reappear in varying degrees and ways since late antiquity, but now with a sophistication and an encyclopedic push which are at once Islamic and very universal.

This historic trajectory of the *stoicheia* draws a path from the East to the West – like the Phoenician and Ephesian letters came to Greece, and like the Indian numerals came to the Arabs, and then again westward into Europe, or like the religions of Abraham spread from the East. Then there is also the semantic trajectory of the *stoicheia*, from ancient Greek doctrines and techniques – from Greek philosophy, science and magic – to Abrahamic religions in their many salvific dimensions.

In the following pages, I shall examine, always from the same alphanumeric vantage point, the works of the Ikhwān al-Ṣafā' or Brethren of Purity (active around the early tenth century), the works on magic and esoteric lore attributed to Aḥmad al-Būnī (d. 1225), and the works of the Andalusian scholar and mystic Muḥyī al-Dīn Ibn ʿArabī (d. 1240). As will be appreciated, this selection retraces once again a path from Basra in the East to the farthest western reaches of the Islamic polity. By way of transition and as a sort of preamble, and given its interest from the point of view of letter cosmology, I shall first introduce a passage from the *Kitāb al-zīna* (*Book of the Ornament*, on the superiority of the Arabic language) of Abū Ḥātim al-Rāzī, an Ismāʿīlī scholar of the early tenth century.

A. Abū Ḥātim's Letter Cosmogony

The following text[1] comes naturally into our timeline not only because of its subject, but because it is introduced as a tradition reported from Jaʿfar al-Ṣadiq, and because it has been related for obvious reasons to the *Sefer Yetsirah*.[2] The word used for letters is the usual *ḥurūf*, but it is clear from a later passage that their phonetic meaning is primarily intended.

كان أوّل ما توهّم الله عزّ وجلّ شيئا متوهّما وأراد مرادا وشاء مشيئا فكان توهّمه ومشيئته وإرادته الحروف الّتي جعلها عزّ وجلّ أصلا لكلّ شيء ودليلا على كلّ مدرك وفاصلا لكلّ مشكل ومن تلك الحروف يعرف كلّ شيء [...] وعليها اجتمعت الأمور كلّها ولم يجعل الحروف عند توهّمه لها شيئا غير أنفسها بتناهٍ ولا وجود لأنّها متوهّمة بالتوهّم والتوهّم في هذا الموضوع أوّل فعل الله عزّ وجلّ الّذي هو نور السموات والأرض والحروف هي مفعولة لذلك الفعل وهي الحروف الّتي عليها بني الكلام كلّه والعبارات واللغات كلّه من

The first thing imagined, willed and desired by God, Mighty and Majestic, was something imaginal, an object of will, and an object of desire; this imagined, desired and willed by Him was the letter-sounds, which He, Mighty and Majestic, made the root for every thing, the sign for every object of perception and the criterion of every difficulty. All things are known through these letter-sounds […] and all phaenomena are joined to them. And when He imagined them, He did not make them anything but themselves in their delimitation without existence, since they were something imagined in the imagination. 'Imagination' at this stage was the first action of God, Mighty and Majestic, who is the light of heavens and earth, and the letter-sounds are the act of this action. These are the letter-sounds upon which is built all speech: and all manners of speaking and languages come from God, Mighty

[1] A. al-Rāzī, *Kitāb al-zīna fī al-kalimāt al-islāmiyya al-ʿarabiyya*, ed. Ḥ. al-Hamadānī (Sanaa: Markaz al-dirāsāt wa-al-buḥūth al-yamanī, 1994), 77–8; G. Vajda, 'Les lettres et les sons de la langue arabe d'après Abū Ḥātim al-Rāzī', *Arabica* 8, no. 2 (1961): 119–21.

[2] See Vajda, 'Les lettres et les sons', 124ff.

الله عزّ وجلّ ومن خلقه وهي ثلاثة وثلاثون حروفا [...] and Majestic, and from his creating, and they are thirty-three letter-sounds.

The first thing to note about this text is the liminal status of these primordial letters,[3] which are not yet the Arabic letters but the phonemes of every language: they are 'imagined'[4] and they have a 'limit' (*tanāhin*) but no existence; this is not unexpected perhaps, since they are precisely a border, an edge (*ḥarf*). *Tanāhā*, as a form of the root *n-h-y*, is said of the water when it reaches a pond and becomes still,[5] a very apt image for the delimitation of the flow of air divided into phonemes, as in the familiar passage in the *Philebus*.

Let me also note how we had in previous pages found the Arabic hendiadys *ḥurūf wa-uṣūl* ('letters and roots') and *ʿanāṣir wa-uṣūl* ('elements and roots') used to translate στοιχεῖα, and now here we encounter the metaphysical phonemes being called 'the *aṣl*', the root-foundation of all things. Lastly, here we seem to have again, though in an indirect way, the relation between the divine light and the metaphysical letters: the mention of God as *nūr al-samawāt wa-al-arḍ* ('light of the heavens and the earth', Qur'ān, 24:35) occurs in such a way that it is unavoidable to relate it to the making of the letters.

Further down the text, Rāzī explains that twenty-eight of these letters are used by the Arabic language, while the remaining five are used by other languages. And then, still on Jaʿfar's authority, he proceeds to explain the 'three creations':

---

[3] Ibn Barrajān speaks of pervasive Reality (*Ḥaqq*) as 'the *Ḥaqq*-According-to-Which-Creation-is-Created' (*al-ḥaqq al-makhlūq bi-hi al-khalq*), which does not entirely belong to created existence, but rather reflects the divine names and qualities in creation. It permeates creation and embraces the reality of all things in differentiated (*mufaṣṣal*) and undifferentiated mode (*mujmal*); see Y. A. Casewit, 'The Forgotten Mystic: Ibn Barrajān (d. 536/1141) and the Andalusian *Muʿtabirūn*' (PhD diss., Yale University, 2014), 354-5.

[4] The translation of *wahm* and related terms is something of a *cause célèbre*, with alternatives varying according to the fields of study: 'estimative faculty', 'compositive imagination', 'magical imagination', 'conjectural faculty'… Cf. Vajda, 'Les lettres et les sons', 245; C. W. Ernst, *Refractions of Islam in India: Situating Sufism and Yoga* (SAGE Publications India, 2016), 397; A. al-Jīlī, *De l'homme universel: Extraits du livre* Al-insān al-kāmil, trans. T. Burckhardt, Mystiques et religions (Paris: Dervy-Livres, 1986), 26, 92; and T. Kukkonen, 'Imagination in philosophy', *Encyclopaedia of Islam, THREE*, 2018.

[5] Ibn Manẓūr, *Lisān al-ʿarab*, 4565b.

فالخلق الأوّل التوهّم لا وزن له ولا لون ولا حركة ولا يسمع ولا يحسّ

The first creation is imagination (*tawahhum*), which has no weight, colour or movement, and is inaudible and imperceptible.

والخلق الثاني الحروف لاوزن لها ولا لون وهي مسموعة بالآذان موصوفة بالألسن غير منظور إليها

The second creation is the letter-sounds, which have no weight or colour, are heard by the ears and articulated by the tongues, but are not visible.

والخلق الثالث كلّ ما كان بالحروف موصوفا في الأنواع كلّها وهو ملموس ذو وزن منظور إليه

The third creation is everything that is articulated by the letters in every possible kind, what is tangible and perceptible, having weight and being visible.

It is quite remarkable that in this cosmology, the 'letters' are limited to their phonetic reality, ignoring the Qur'ānic imagery of the ink, related, as we have seen, to the concepts of matter and measure. One of the recurring traits of the concept of *stoicheia* is the ambiguity between their phonetic and graphic aspects, manifest from the earliest grammatical evidence in the unstable lexical distinction between στοιχεῖον and γράμμα. This strictly aural cosmogony will perhaps serve as a guiding thread for future research into the source of this striking report by Rāzī.

B. A Pure Brotherhood

The Ikhwān al-Ṣafā' or Brethren of Purity, an enigmatic group of scholars active around Basra in the early tenth century,[6] produced an encyclopedic collection of 52 treatises or *Epistles*, the *Rasā'il Ikhwān al-Ṣafā'*, which

[6] See G. De Callataÿ, 'Brethren of Purity (Ikhwān al-Ṣafā')', *Encyclopaedia of Islam, THREE*, 2013 for attribution issues; regarding the earlier dating, see G. De Callataÿ, 'Philosophy and Bāṭinism in al-Andalus: Ibn Masarra's *Risālat al-Iʿtibār* and the *Rasā'il Ikhwān al-ṣafā*', *Jerusalem Studies in Arabic and Islam* 41 (2014): 298–9, and S. Stroumsa, 'Wondrous Paths: The Ismāʿīlī Context of Saadya's 'Commentary on *Sefer Yeṣira*'', *Bochumer Philosophisches Jahrbuch für Antike und Mittelalter* 18, no. 1 (2015): 85. L. Saif, 'Ikhwān Al-Ṣafā''s Religious Reform and Magic: Beyond the Ismaʿili Hypothesis', *Journal of Islamic Studies*, March 2018 is an important recent contribution regarding the Ismāʿīlī affiliation of the Ikhwān.

have been rightly considered unique in every way, both inside and outside the Muslim world.[7] Indeed, the tendency to merge the accumulated treasury of late Hellenistic and Abrahamic scriptural scholarship into a doctrinal synthesis comes to the fore in the *Rasā'il* in many ways, and it is hardly surprising that they have been called 'the Pythagoreans of Islam',[8] or 'Muslim Neoplatonists',[9] and even a 'Masonic brotherhood of the eleventh century.'[10] Their work was greatly influential in many direct and indirect, acknowledged and unacknowledged ways over the centuries, on authors of very different disciplines who were all able to draw from the overflowing source of the Ikhwān. The *Rasā'il* were translated into Persian, and some excerpts of it into Hebrew, Turkish, Hindustani and Latin.[11]

My parsimonious approach to the riches of the Ikhwān, as I try to focus strictly on the points immediately relevant to my research, may smack some readers as unfair and narrow, but I trust that such a cautious methodic approach will not be unrewarded. The *Rasā'il* make for fascinating reading – al-Qifṭī calls them *maqālāt mushāwwiqāt ghayr mustaqṣāt*, 'thrilling, unfathomable treatises' – [12] and it is easy to be carried away in the train of thought of the Ikhwān from one interesting topic to another. In fact, the *Rasā'il* delve into all of the aspects of alphanumeric cosmology that we have been studying, and I will now simply single out a few important instances that make a significant addition to this chapter.

---

[7] See G. De Callataÿ, 'The Classification of the Sciences according to the Rasa'il Ikhwan al-Safa'', (lecture), (The Institute of Ismaili Studies, London), 2003: 1.

[8] Y. Marquet, 'Les Frères de la pureté, pythagoriciens de l'Islam', *SEHA, Édidit*, 2006.

[9] I. R. Netton, *Muslim Neoplatonists: An Introduction to the Thought of the Brethren of Purity (Ikhwān Al-Ṣafā')* (Psychology Press, 2002).

[10] M. Steinschneider, 'Die lautern Brüder, ein Freimaurerorden des XI. Jahrhunderts', *Hebräische Bibliographie* 2 (1859): 91–92, (republished in F. Sezgin (ed.), *Rasā'il Ikhwān aṣ-Ṣafā'*. Texts and Studies. Frankfurt: IGAIW, 1999).

[11] For an overview of the current knowledge about their readership, which is still in the early stages, see De Callataÿ, 'Brethren of Purity – EI3'; G. De Callataÿ, *Ikhwan al-Safa': a Brotherhood of Idealists on the Fringe of Orthodox Islam*, Makers of the Muslim World (Oneworld Publications, 2005), 16; G. Flügel, 'Ueber Inhalt und Verfasser der arabischen Encyclopädie رسائل اخوان الصفاء وخلان الوفاء : d. i. die Abhandlung der aufrichtigen Brüder und treuen Freunde. Nebst Andeutungen über die Einrichtungen des Bundes der Verbrüderten', *Zeitschrift der Deutschen Morgenländischen Gesellschaft* 13 (1859): 2–3.

[12] *Ibid.*, 38.

I. How Pythagorean are the Ikhwān?

A full identification of the Ikhwān as Pythagorean can only give rise to complications, given that the definition of what is Pythagorean is itself subject to discussion, as we have seen in Chapter 2, and Marquet's attempt to make the doctrines of the *Epistles* fit neatly into a Pythagorean scheme have met with valuable criticism.[13] Nonetheless, from our alphanumeric point of view, which leaves aside the more soteriological and ascetic aspects of Pythagoreanism, there would seem to be hardly any question regarding this identification: the primal role of number in cosmology is evident throughout the *Epistles*, where it is 'the ultimate foundation of every truth,'[14] conceived as order and correspondence, and inseparable from the ideas of cosmos and order.[15]

This all-important place of number in the cosmology of the Ikhwān is already made clear in an example from the introduction to the collection, an example which illustrates just how daunting their usage of the terminology can be, and which includes one of a handful of occurrences of the word *usṭuqus*,

إن علم العدد جذر العلوم وعنصر الحكمة ومبدأ المعارف وأسطقس المعاني

The science of number is the root of the sciences, the stock (*ʿunṣur*) of wisdom, the principle (*mabda'*) of the subtle comprehensions, and the primal element (*usṭuqus*) of meanings.[16]

In *Epistle* 32, 'On the Essential Intellectual Principles according to the View of the Pythagoreans', Pythagoras is introduced again as the great arithmetic authority who affirmed:

---

[13] See P. Lory, review of *Les « Frères de la pureté », pythagoriciens de l'Islam*, by Y. Marquet, *Bulletin critique des Annales islamologiques* 23 (2007): 27–28; Izdebska, 'The Attitudes of Medieval Arabic Intellectuals towards Pythagorean Philosophy: different approaches and ways of influence', 33–4.

[14] P. Lory, 'La philosophie du nombre chez les Ikhwân al-Safâ'', *Annuaire de l'École pratique des hautes études. V^e section, Sciences religieuses* 101 (1992): 211.

[15] For these topics above in Chapter 2, see pp. 60 and 57.

[16] Ikhwān al-Ṣafā', *Rasā'il Ikhwān al-Ṣafā' wa Khullān al-Wafā'*, 4 vols. (Beirut: Dār Ṣadir, n.d.), I.22 (hereafter cited as RIS-Beirut); I quote from the Beirut edition (Arabic numerals for epistles, Roman for volumes), with references to the IIS/OUP editions when possible.

إن طبيعة الموجودات بحسب طبيعة العدد

The nature of existing beings ***accords*** *with the nature of number*.[17]

This characterisation of the relation between beings and number is rather flat when we recall the expressions used by Nicomachus and conveyed by Thābit, speaking of participation, lineage, marriage (μετουσία, translated as Ar. *mushāraka*), between numbers and reality.[18] It would seem that the Ikhwān follow a sort of 'soft' number Pythagoreanism, wherein number remains an epistemological 'category' to be applied to things – thus far from the the more 'realist' view found in the *Timaeus*, in Nicomachus, Iamblichus and Proclus. The word *bi-ḥasabi* is key, as it defines a relation which has to do with reckoning, enumeration, mental processes.

Nevertheless, and in truly Pythagorean fashion, because it has to do with harmony, with music, and with more than a hint of reticence, it turns out that the deepest understanding of number in the *Rasā'il* is found in relation to squared numbers – what we know nowadays as 'magic squares' – and with music.

II. Magic Squares in the Epistles

It is currently accepted that the figurate numbers or 'harmonic dispositions of numbers' (*awfāq al-aʿdād*), as they came to be called in later Arabic literature,[19] were dubbed 'magic' because they were transmitted to Europe in the fourteenth century through astrological and magical texts.[20] This explanation is a little simplistic, given that from the most ancient occurrences in China, the squares were already part of rituals that we would

---

[17] Ikhwān al-Ṣafā', *On Arithmetic and Geometry: an Arabic critical Edition and English Translation of Epistles 1-2*, trans. N. El-Bizri, Epistles of the Brethren of Purity (Oxford: Oxford University Press in association with The Institute of Ismaili Studies, 2012), 32a.1, emphasis mine. Due to complexities of the manuscript tradition, the editors of the IIS edition have decided to publish *Ep*. 32 in two versions. Version 32a is only a brief tract introducing and sketching subjects developed in *Ep.* 32b.

[18] See above, p. 76.

[19] B. Hallum, 'New Light on Early Arabic *Awfāq* Literature', (forthcoming), (London), 2018: 2. I am most grateful to Bink Hallum for sharing his knowledge on magic squares so generously every week at the Warburg Institute, and for allowing me to cite his forthcoming publication.

[20] See J. Sesiano, 'Les Carrés magiques de Manuel Moschopoulos', *Archive for History of Exact Sciences* 53, no. 5 (1998): 379.

call magic, just as long before getting their European name, they were used to bring about 'special' effects. But this may be, once again, a matter of labelling – we needed a word to identify something which could no longer be explained within a new cosmology, one in which quantity and quality where no longer inextricably united. As we shall see immediately, this was far from being the case in the *Rasā'il*.

One of the main appeals of figurate numbers has always been the mathematical combinatorial one: how to develop methods to construct new arrays of increasing complexity. This partly justifies why, towards the end of the *Epistle on Geometry*, the Brethren introduce them explaining that, after having shown some of the special properties (*khawāṣṣ*) of numbers and of geometrical shapes, they will now speak about some of the properties of their conjunctions, for through them 'are made evident some of their particular properties which are not visible when they are separated.'[21] Then follow in ascending order the first seven regular squares, called at first simply *ashkāl*, 'shapes', but finally identified to talismans, and then a little more explanation: why do they have such 'special properties'? It is because 'there is no entity, either mathematical, natural or divine, which is devoid of an exclusive property. And so their combinations (*majmūʿāt*) too have special properties' which do not manifest in isolation.[22] This applies to numbers, shapes, forms, times, places, flavours, colours, utterances, letters, etc., and so, 'when you join them symmetrically (*ʿalā al-nisab al-ta'līfiyya*),[23] then their special properties and their effects become evident.'

After the previous chapters of this enquiry, it will not be difficult to appreciate how this conjunction of shape and number echoes the nature of the alphanumeric elements, which were each of them precisely such a conjunction (with the third acoustic level added to it) and which had their own 'personality', their 'character' as listed in the many works devoted to

---

[21] II.1.109; Ikhwān al-Ṣafā', *On Arithmetic and Geometry*, 2.26.

[22] II.1.113.

[23] Literally, 'following the proportions of composition.' The original meaning of συμμετρία is very apt here, implying commensurability, due proportion and suitability, all more intellectual than aesthetic. See Tatarkiewicz, *History of Six Ideas*, 90–91, which includes a comparison with the closely related concept of eurhythmy. Cf. Hallum, 'New Light', 33.

restricted letter cosmology. But actually, the Ikhwān do still inch closer to some of our previous findings.

III. Music: Prosody: Grammar

It is quite significant that the *Epistle on Music* includes lengthy tracts on prosody and on writing (*kitāba*), the 'noblest of arts'.[24] From music to our theme the transition is seamless, since music is based, like prosody and metrics, on the contrast between sound and silence, like vowels and consonants, long and short syllables. Regarding writing, the shapes of the letters are explained to derive also from a binary, the straight and curved lines, and so put in relation with the art of geometry (1.219) – the letter-shapes are explicitly here the geometrical aspect of language.[25]

In spite of this common ground between music and writing, music is said not to have the clarity of language, because melodies and rhythms do not have an alphabet (*laysa lahā ḥurūf al-muʿjam*),[26] a remark made elsewhere to signal similar shortcomings of other disciplines.

Several pages are devoted to the geometry of calligraphy, culminating with the geometry of the human body, and all this geometry depends on

ما كانت تركيب بنيته وتأليف أجزائه على النسبة الأفضل

… that the arrangement of the structure and the composition of the parts are based on the noblest proportion.[27]

The building vocabulary, with all the terms referring to structure and composition is essential to the worldview of the Ikhwān which is completely demiurgic, and in line with the doctrines of the *Timaeus* while strikingly at odds with their own treatment of the cosmic status of numbers – what I have called a 'soft Pythagoreanism'.

---

[24] RIS-Beirut, 5.I.196ff.

[25] See also 6.I.252, where the letters are said to 'differ in their shapes, and to be distinct in their forms', *mukhtalifa al-ashkāl mutabayyina al-ṣuwar*.

[26] RIS-Beirut, 5.I.235; see Ikhwān al-Ṣafā', *On Music: an Arabic Critical Edition and English Translation of Epistle 5*, trans. O. Wright, Epistles of the Brethren of Purity (Oxford: Oxford University Press in association with The Institute of Ismaili Studies, 2010), 164, 166; see esp. n. 323.

[27] RIS-Beirut, I.222; Ikhwān al-Ṣafā', *On Music*, 129 (Ar.)

IV. 'Letters' in the Rasā'il

Even closer to our subject, the most important identification between letters and numbers occurs in Epistle 31, *On the Difference between Languages*, where in order to name the newly created beings, Adam is said to have been taught the nine 'signs' (*ʿalāmāt*) or 'letters' (*ḥurūf*) which turn out to be the nine numbers from one to nine, 'which the people of India use in this form ١٢٣٤٥٦٧٨٩'.[28]

In an echo of the triple nature of the στοιχεῖα we have studied before, the letters are mentioned at the beginning of the logical treatise *On the Isagoge* (Ep. 10),[29] because they make up utterances and convey logical meaning in three ways: intellective (*fikriyya*), by giving form (*muṣawwira*) in their essences; linguistic (*lafẓiyya*), as utterances; and graphic (*khaṭṭiyya*).

الحروف الخطّيّة إنما وضعت سمات ليستدلّ بها على الحروف اللّفظيّة، والحروف اللّفظيّة وضعت سمات ليستدلّ بها على الحروف الفكريّة، والحروف الفكريّة هي الأصل	The graphic 'letters' denote by signs the linguistic 'letters', the linguistic 'letters' denote by signs the intellective 'letters', and the intellective letters are the foundation.[30]

Once again, the letters in their highest level are the root-foundation, the *aṣl*.

Later, in chapter 7 of the same epistle,[31] when this discussion is reprised, the letters are no longer mentioned, as had been promised, but 'the foundation' (*sc.* of intellective letters) is explained, in what seems to me to be the closest to a metaphysics of 'letters', saying,

---

[28] RIS-Beirut, 31.III.141–2. For numerals as the 'letters of Adam', see S. H. Nasr, *An Introduction to Islamic Cosmological Doctrines* (New York: State University of New York Press, 1993), 211. Also commented in R. F. Albert Reyna, 'El concepto de lenguaje en las Epístolas de los Hermanos de la Pureza', *Anaquel de estudios árabes* 20 (2009): 14; and F. Dieterici, *Die Philosophie der Araber im IX. und X. Jahrhundert n. Chr. aus der Theologie des Aristoteles, den Abhandlungen Alfārābīs und den Schriften der Lautern Brüder*, 2 vols. (Leipzig: J. C. Hinrichs'sche Buchhandlung, 1876), 2.116–7.

[29] RIS-Beirut, 10.I.392–3.

[30] Ikhwān al-Ṣafā', *On Logic: An Arabic Critical Edition and English Translation of Epistles 10-14*, ed. C. Baffioni, Epistles of the Brethren of Purity (Oxford University Press in association with The Institute of Ismaili Studies, 2010), 68.

[31] 10.I.398/Baffioni 75.

إن الأشياء كلها بأجمعها صور وأعيان غيريّات أفاضها الباري

All things in their totality are different forms and selves (*aʿyān*) emanated by the Creator.

Given the context, I think it is clear that by 'the forms and selves', or essences, are meant those same that had been called *ḥurūf* some pages before, and that they are thus said to be emanated by the creator.

Studying in detail the architecture of this emanation, of how it comes about through the setting of metaphysical 'limits', and how it forms part of different levels of divine craftsmanship would exceed the boundaries of this work, but it will certainly be relevant to indicate some basics of their cosmogony.[32]

Epistle 15 is devoted, among other concepts, to explaining what 'matter' (*hayūlā*) is or, rather, to what the four different levels of matter are. It is in their third level, ascending, in what they call the *hayūlā al-kull*, the universal matter, also known as the absolute body (*al-jism al-muṭlaq*),[33] that I seem to find a correspondence to the intermediary level of the 'universal elements' or the *materia quantitate signata* of the previous chapter. In Epistle 8, 'On the Practical Arts,'[34] there is similarly a question of the psychic craftworks (*al-maṣnūʿāt al-nafsāniyya*), also the third degree on the ascent, which are compared to 'a system of the centres of the elements' (*niẓām marākiz al-arkān*), and also to 'a system of the forms of the universe in their totality' (*niẓām ṣuwar al-ʿālam bi-al-jumla*).

However, because the details of their expositions are not free of some contradictions, and because they have a system of nine 'levels' (*marātib*) or 'boundaries' (*ḥudūd*) of emanation[35] mingled with the four kinds of matter, and also with the four types of craftworks (*maṣnūʿāt*), the strong impression given is that of a continuum in which the cutting points do not quite match the notches of other comparable 'scales'. A close comparison and examination is beyond my competence, but several aspects of their cosmological hierarchy are clearly related to the systems of Plotinus and

---

[32] See summaries in De Callataÿ, *Ikhwan al-Safa': a brotherhood*, 17–20; S. Akkach, *Cosmology and Architecture in Premodern Islam: An Architectural Reading of Mystical Ideas* (State University of New York Press, 2012), 36–40; Nasr, *An Introduction*, 51–2.

[33] RIS-Beirut, 6–7.

[34] RIS-Beirut, I.277.

[35] RIS-Beirut, 32.III.181–2; cf. De Callataÿ, *Ikhwan al-Safa': a brotherhood*, 17–20.

Proclus, reminding us of Marquet calling their doctrines a 'syncretism of syncretisms'.[36]

V. Risāla al-Jāmiʿa – *The Comprehensive Epistle*

To complete what is necessarily a sketchy examination of the Ikhwān's corpus, I would like to register two passages from the 'crown' of the *Epistles*, the *Risāla al-Jāmiʿa* or *Comprehensive Epistle*,[37] which in general follows with few divergences the subjects of all the other epistles, but gives more prominence to the doctrine of the divine language.[38]

In the section *Fī al-ibdāʿ al-awwal wa-al-qawl bi-anna ʿilm al-ʿadad fayḍ al-ʿaql ʿalā al-nafs*, 'On the first creation and the assertion that the knowledge of number is an effusion of the intellect into the soul',[39] practically nothing is said about number, but we find instead a valuable reference to the divine script, drawing on the Qur'ānic images of the Tablet and the grid lines.[40]

فخطّ في اللوح الكريم سطور المشيأة واحرف الإرادة

The script on the Magnificent Tablet is the lines of the Will and the letters of the Volition.

Later, in the section 'That numbers precede all sciences in the same way as the intellect precedes all things,' we find the following lines which are close to what is found in the *Rasā'il*:

سائر العلوم موجودة في علم	All other knowledges exist within the know-
العدد وصورته مطابقة لصورة	ledge of number, as its form corresponds to
الموجودات فكمال الحالين له	the form of the existants. So the perfection
وهو صورة البسائط بالقوة وصورة	of both states belongs to it, since it is the

---

[36] Cited in De Callataÿ, *Ikhwan al-Safa': a brotherhood*, 75.

[37] See W. Madelung and T. Mayer, eds., *Avicenna's Allegory on the Soul: an Ismaili Interpretation. An Arabic Edition and English Translation of ʿAlī b. Muḥammad b. al-Walīd's* al-Risāla al-mufīda, Ismaili Texts and Translations 22 (London/New York: IB Tauris / The Institute of Ismaili Studies, 2018), 93n, for a summary and references to the at least equally difficult attribution matters.

[38] See Ebstein, *Mysticism and Philosophy*, 45.

[39] Ikhwān al-Ṣafā', *al-Risālah al-jāmiʿah*, ed. M. Ghālib (Beyrut: Dār Ṣadir, 1974/1394), 24.

[40] Cf. a close parallel in *Epistle* 49.IV.203.

التراكب بالفعل فأما كونه صورة البسائط بالقوة فالقول بالالفاظ المؤلّفة من الحروف ووضع كلّ مرتبة منه في مكانه بالقول في النفس غير محتاج إلى مكان بالحسّ ولا معرفة باللمس لتصوّره في النفس واما كونه صورة المركبات المحسوسة والاشياء المركبة الموضوعة في الأمكنة الكائنة في الأزمنة المشار إليها بالاسماء الّتي هي الواحد والاثنان والثلاثة والأربعة والخمسة والستة والسبعة والثمانية والتسعة والعشرة وما زاد بالغا ما بلغ فهو بالقوة مصور في نفس العاد وهو بالفعل صورة المعدود

form of the elements in potency and it is the form of the compounds in act. As for its being the form of the elements in potency: speech is [likewise] in words composed of letters, and the setting of every rank of number is to do with its location in the soul by means of speech, with no need of a sensorial space or tactile cognition in order to be conceived in the soul. Now, as regards its being the form of the perceptible compounds which occupy places and arise in time – the ones denoted by the names one, two, three, four, five, six, seven, eight, nine, ten and so on – it [*number*] is in potency a fashioner (*muṣawwir*) in the soul of the one who counts, and in actuality it is the form of what is counted.[41]

In this fragment we have a complete expression of most aspects of the Ikhwān's metaphysics of number, with a curious mention of the letters.

The correspondence in question, *muṭābaqa*,[42] a conformation or very close concordance, is quite different from the *bi-ḥasabi* found earlier, and more like the relation between the numbers inside a magic square (*wafq*).

The 'two states' refer in this context to those in the section title, the cognitive of *ʿulūm* and the ontological of *ashyā'*. The 'simples' are another name for the four elements (*arkān*).[43] Regarding the two immediate assertions, I am reading the 'elements in potency' as an intermediary level of the elements, as yet immaterial; it would be those which not only

---

[41] Ikhwān al-Ṣafā', *RJ*, 29.

[42] In Lisān, 2636c it is defined as *muwāfaqa*, a 'harmonisation'. Cf. P. Lory, 'La magie des lettres dans le "Šams al-maʿarif" d'al-Būnī', *Bulletin d'études orientales* 39/40 (1987): 109.

[43] RIS-Beirut, 26.II.473.

correspond to number, but number *is* their form. On the lower *actual* level, number is the form of the composites too.[44]

The second paragraph expands on the form of number being the elements potentially. It takes a turn to language – why? – most likely because language and letters belong par excellence to such a level. I read retaining *ʿadad* as the masculine singular reference: 'the disposition (*waḍʿ*) of any order of number (*minhu*) is to do with its situating it in the soul, abstractly.'

The third paragraph expands on the lower actuality of the form of numbers, and introduces in it a subdivision: when you count, number (here almost personified), as the form of the integers, is in your soul a producer of forms – it *informs* the soul by means of the integers, and as such it is the psychic *formator*. On the other hand, number is, also by means of the integers, the actual form of what is counted; and as such it is the ontological *formator*.

C. A 'Sufi' Interim

One of the developments which, in the Islamic world, go in parallel with the gradual advent of the alphanumeric scission is the consolidation of Sufism (*taṣawwuf*), from the prevailing asceticism of the first centuries, to identifiable groups of masters and disciples, then to a distinct body of literature and associated practices, then, towards the twelfth century, into the rise of the first orders or brotherhoods.[45] It is remarkable that although both al-Būnī and Ibn ʿArabī belong by their spiritual lineage to lines of Sufi transmission,[46] and although they are immediately recognised

---

[44] A summary of this topic in context can be found in the section 'Die Mittelstufen des All', Dieterici, *Die Philosophie der Araber*, 1.177.

[45] For a historical outline, see A. Schimmel, *Mystical Dimensions of Islam* (Chapel Hill: University of North Carolina Press, 1975), esp. 53–85 and 244ff.

[46] J.-C. Coulon, 'La magie islamique et le « corpus bunianum » au Moyen Âge' (PhD diss., Sorbonne, Ecole doctorale IV: Civilisations, cultures, littératures et sociétés, 2013), 1.432ff; J. J. Witkam, 'Gazing at the Sun: Remarks on the Egyptian Magician al-Būnī and his Work', in *O Ye Gentlemen: Arabic Studies on Science and Literary Culture (in Honor of Remke Kruk)*, Islamic Philosophy, Theology and Science. Texts and Studies 74 (Brill, 2007), 190–97; Melvin-Koushki, 'The Quest', 191–7.

as *mutaṣawwifa* by Arabic speakers,[47] their writings are not necessarily, or not unanimously, considered typical representatives of Sufi literature; rather, they seem to be each a fountainhead from which later generations of Sufis, philosophers and magicians and others, have drawn and continue to draw.

The lineage of alphanumeric cosmology, as we have seen, does not only run through mystical lineages, but is also evident in works of grammar and metaphysics, and often found in theological works that reject any sort of *ḥurūfī* mysticism. Ibn Sīnā (d. 1037), for instance, aside from his metaphysical writings in Aristotelian style, wrote a brief treatise, the *Risāla al-nayruziyya*, with a cosmogony based on the letters of the alphabet.

Even when there is no question of letters or numbers, the idea of a universal order (*niẓām*), harmonisation (*wafq*), and of a reckoning (*ḥisāb*) of God are fundamental in most works of *ʿaqīda* or articles of faith. The liminal nature of language, necessitated by the status of the Qur'ān and ensuing reflections, make it impossible to always turn a blind eye to the question of the letters, their ontological status, and their special properties.

These, and countless such examples, are all testimonies to the underlying coherence and the ubiquity of a cosmology based on the following points:[48]

1. All is number in the universe, from the primordial creative act to the details of earthly phenomena, and the nature of numbers is in full actuality in the divine Word, where number and meaning coalesce as they give form and structure to the world.

2. Hence that the structure of the universe is not only comparable to language: all of it is language indeed. And so alchemy and magic (like prayer and the divinatory arts) are accordingly sub-disciplines of a cosmic linguistics, like cosmic syntax, spelling or morphology.

3. Human language – in its logic, utterance and writing – is the real concretion of universal language; not only is it analogous to it, but it participates in it and in its realisation. When man casts a magic spell or

---

[47] *Mutaṣawwif* is the adjective commonly used by Arabic speakers to denote what is often described as 'Sufi' in other languages; it literally means 'one who is in the process of becoming a *ṣūfī*.'

[48] With minor adaptations to the present context, I paraphrase Lory, 'La magie des lettres', 89.

utters a prayer, his speech gives him (literally) a say in the cosmic speech that constitutes the world.

*

Down the centuries, these principles are found with varying prominence in the works of authors considered to be philosophers or mystics or esotericists to varying degrees, and all generally related in one way or another to Sufi lineages.[49] Why? In a process comparable to the Christianization of philosophy in Europe, where monks and anchorites became the *de facto* torch bearers of ancient philosophy,[50] a gradually institutionalised Sufism tended to include in its fold the likes of Sahl al-Tustarī (d. 896), Ibn Masarra (d. 931), al-Ḥakīm al-Tirmidhī (d. ca. 936), Abū ʿAbd al-Raḥmān al-Sulamī (d. 1021), and Ibn Barrajān (d. 1141),[51] who were all to a certain extent speculative philosophers, and who in their works dealt with alphanumeric speculation.[52] Were they Platonising emanationists or straight Ashʿarite creationists? From the point of view of the metaphysical στοιχεῖα, which synthesize letter, number, phoneme, physical element and zodiac sign, it really is not possible to draw a line between a Platonising doctrine of astral agency and one of divine cosmogonic effusion. We can perhaps take a hint from al-Ghazālī, who provides an elegant, if inconclusive, way out: 'The truth lies between the masculinity of transcendence (*fuḥūla al-tanzīh*) and the femininity of similarity (*unūtha al-tashbīh*).'[53]

Before moving on to my two last authors, who are both heirs to this complex tradition, and through whose works the same cosmology of the

---

[49] Cf. the account in Saif, 'From *Ġāyat al-ḥakīm*', 309–17.

[50] Cf. P. Hadot, *Philosophy as a Way of Life: Spiritual Exercises from Socrates to Foucault*, trans. M. Chase (Oxford: Blackwell, 1995), 269–70: 'If to do philosophy was to live in conformity with the law of reason… the Christian was a philosopher, since he lived in conformity with the law of the Logos – divine reason.'

[51] For concise and balanced historical overviews, I recommend Lory, 'La science des lettres en terre d'Islam', and Melvin-Koushki, 'The Quest', 183–7.

[52] Cf. T. Mayer, 'Theology and Sufism', chap. 13 in *The Cambridge Companion to Classical Islamic Theology* (Cambridge University Press, 2008), 276: 'the so-called "School of Ibn Masarra" gave an essentially speculative stamp to the Sufism of the Iberian peninsula.'

[53] Cited in K. Nakamura, 'Imām Ghazālī's Cosmology Reconsidered with Special Reference to the Concept of "*Jabarūt*"', *Studia Islamica* 80 (1994): 34.

divine word and letters manifests in very different ways,[54] I would concur with Pilar Garrido in that most contemporary discussions about whether a given author is 'Sufi' or 'philosopher', are prolongations of the real vexing question of the definition of philosophy, or for that matter, of a monolithic definition of Sufism.[55] Even in the works of the paradigmatic champion of 'orthodox' *taṣawwuf*, Abū Ḥāmid al-Ghazālī (d. 1111), one finds passages where a very nuanced doctrine of divine language and of divine causation makes it hard to draw a clear dividing line from late Hellenistic cosmogonies.[56] In fact, the metaphysical and theological impasse has to do, as mentioned above, with language, *ergo*, with the 'letters': first, the names and the attributes of God, and second, the uncreatedness of the Qur'ān.[57]

Of the three major Sufi *summae* of the thirteenth century, namely, Rūmī's *Mathnawī*, al-Būnī's corpus on magic and esoterica, and Ibn ʿArabī's *Futūḥāt*,[58] the last two are very explicitly based on and pervaded by those theologically risky topics, the Names and the Divine Word, and this is why I shall conclude this chapter with them.

D. Al-Būnī and *The Sun of Divine Sciences*

Aḥmad ibn ʿAlī al-Būnī (d. 1225) is the persona of an unknown compiler or a group of authors who produced the greatest and most influential Arabic compilation of magical texts, what we now call the *Corpus Bunianum*, the work of 'several generations of practising magicians'.[59] The most famous work of the *Corpus* is the book titled *Shams al-maʿārif*, *The Sun of Divine*

---

[54] Coulon, 'La magie islamique', 438.

[55] P. Garrido Clemente, '¿Era Ibn Masarra de Córdoba un filósofo?', *Anaquel de Estudios Árabes* 21 (2010): 130.

[56] I am thinking in particular here of the treatise on Divine Names, *al-Maqṣad al-asnā fī sharḥ asmā' Allāh al-ḥusnā*, and his *Niche of Lights*, *Mishkāt al-anwār*, which has been the subject of Neoplatonic comparison; cf. Nakamura, 'Imām Ghazālī's Cosmology'.

[57] An excellent and concise summary is given in P. Tan, 'Divine Simplicity in Christianity and Islam: Al-Ghazali, Ibn Rushd, Thomas, and Calvin on the Essence and Attributes of God/Allah' (PhD diss., Vrije Universiteit Amsterdam, 2016), 37–48.

[58] *Al-futūḥāt al-makkiyya*, *The Meccan Revelations*. See Melvin-Koushki, 'The Quest', 183–7 where, in line with the scope of the work, the Persian scholar Saʿd al-Dīn Ḥamuvayī (d. 1252) is added as a major author.

[59] Witkam, 'Gazing at the Sun', 183.

Sciences, a 'true encyclopedia of Islamic, or Islamicised, magic.'[60] As is common in classical Islamic scholarship, and notably as we recently encountered with the *Sefer Yetsirah*, the *Shams al-maʿārif* is extant in three versions of different lengths,[61] without there being conclusive evidence in favour of the earlier origin of any of the three.[62] The long version, *Shams al-maʿārif* 'al-kubrā' is by far the most popular version,[63] the one usually published, and also the one which contains more diagrams and illustrations of later provenance. I shall be using Coullaut's edited version of the first chapter,[64] and a contemporary printed edition for the rest of the book.

I. The Letter-Elements in al-Būnī

The *Shams al-maʿārif* portends to share knowledge on the disposition of the divine Names, on the qualities and secrets of the letter-numbers (*ḥurūf*), and on invocations and supplications;[65] in practice, it includes information on astrology, talismanic magic, alchemy and divination, but underlying all these, or like a refrain running through the whole work, is the concern with the 'supernatural force contained in the letters and the names.'[66] It has been considered a perfect example of 'religious magic', being mostly based on esoteric interpretations of the Qur'ān,[67] hence that it has also been called 'Qur'ānic theurgy'.[68]

---

[60] Witkam, 'Gazing at the Sun', 185. Regarding the alternative title *Shams al-maʿārif wa-laṭāʾif al-ʿawārif* (*The Sun of Divine Sciences and the Subtleties of Those Who Know*) as that of a different work, see Saif, 'From *Ġāyat al-ḥakīm*', 337, based on Gardiner, 'Forbidden Knowledge?'

[61] See Witkam, 'Gazing at the Sun', 186.

[62] The shorter version, *al-ṣugrā*, has been edited with a comprehensive treatment of the manuscript tradition in the four-volume thesis by Coulon, 'La magie islamique'; see in particular 2.I–III. Key recent findings by Gardiner tend to confirm much later origins of significant parts of the *Shams* tradition; see N. D. Gardiner, 'Esotericism in a Manuscript Culture: Aḥmad al-Būnī and His Readers through the Mamlūk Period' (PhD diss., University of Michigan, 2014), 19ff.

[63] J. Coullaut Cordero, 'El *Kitāb Šams al-Maʿārif al-Kubrà* (*al-ŷuz' al-awwal*) de Aḥmad b. ʿAlī al-Būnī: Sufismo y ciencias ocultas' (PhD diss., Facultad de filología, Universidad de Salamanca, 2009), xviii–xix.

[64] *Ibid.*; see xxxiff. regarding the manuscript tradition.

[65] A. al-Būnī, *Shams al-maʿārif* (Beirut: Mu'asasa al-nūr al-maṭbūʿāt, 2000), 6.

[66] Lory, 'La magie des lettres', 89.

[67] Coullaut, 'El *Kitāb Šams al-Maʿārif*', xx.

[68] S. N. Ahmad, *Magic and the Occult in Islam: Ahmad al-Buni and his Shams Al-Maʿarif*, lecture given at the Warburg Institute, May 2013.

II. The First Paragraph

From the beginning of the first section, the *Shams* is clear about the 'architectural' function of the letters:

1. The Basics of Letter Cosmology

أتكلم أولا على الحروف المعجمة إذ هي أصول الكلام وأساسه وبها يرتفع بناؤه

I shall speak first of the letters of the alphabet, since they are the roots and the foundation of speech, and upon them is raised its structure.[69]

The terms involved, *aṣl, asās, rafʿ, binā'*, belong to the imagery of construction, and three of them are also well-known grammatical terms. A detailed reading of the *Shams* in the light of grammatical terminology remains a desideratum, and may be able to give a more complete understanding of the architectural symbolism. It is remarkable, though surely not surprising, how the three parts of speech in Arabic grammar, *ism*, noun, *fiʿl*, verb, and *ḥarf*, 'particle', are so crucial in the cosmology of Qur'ānic theurgy. The following cosmogonic fragment illustrates another linguistic analogy:

وأن العالم العلويّ يمدّ العالم السفليّ فعالم العرش يمدّ عالم الكرسي وعالم الكرسي يمدّ فلك زحل...

The superior world prolongs itself into the lower world: the world of the throne prolongs itself into the world of the pedestal, and the world of the pedestal prolongs itself into the sphere of Saturn...[70]

The descending generative relation between the worlds, or metaphysical stages of manifestation, is one of prolongation (*madd*) in all the senses associated above[71] with the image of the divine ink, the concept of matter (*mādda*), and the syllabic lengthening (*madd*) as studied in prosody. Quite in line with the Abrahamic doctrines of the divine creative imperative (*amr*), the coming to be of every new level of manifestation occurs in the

---

[69] Coullaut, 'El *Kitāb Šams al-Maʿārif*', 1.9; Coulon, 'La magie islamique', 2.9.

[70] Coullaut, 'El *Kitāb Šams al-Maʿārif*', 1.9; Coulon, 'La magie islamique', 2.9.

[71] See p. 174. For this translation of *yamuddu*, see Lisān, 4157a; Lane, *LL*, I.22696; the sense is the same as in Qur'ān 31:27, *al-baḥru yamuddu*, 'the sea is ink/overflows' with abundance. Cf. also Lory, 'La magie des lettres', 104, n. 34.

manner of the prolongation of the syllables in Qur'ānic recitation, and the matter of every new world is a phonetic matter.

2. Letter-Number Relation

Also in the first page, it is made clear that 'numbers have secrets, like letters have effects,' and soon thereafter an example involving astrology gives a glimpse into the arithmetical workings.

فلزحل في العلويات حرف الجيم والأعداد الواقعة عليها ثلاثة على الجملة وأما على التفصيل فثلاثة وخمسون هكذا الميم بأربعين والياء بعشرة والجيم بثلاثة وهو أيضا بثلاثة أحرف وله من السفليات حرف الصاد وهو في العدد تسعون وله المثلث

In the upper realms, Saturn has the letter *jīm*, and the numbers that correspond to it are three in all: when analysed and added, they total fifty-three in the following way, the *mīm* is forty, the *yā'* is ten, and the *jīm* is three; it also consists of three letters (*aḥruf*); in the lower realms the letter *ṣād* belongs to it, which is, in number, ninety; and the order-3 square belongs to it.[72]

The detail of the numerical correspondence escapes me, but it is clear that every number relation is established in various complementing ways, mostly based on isopsephy, but certainly more complex than a mere substitution of *abjad* values. Further down, more is said about the status of number and its relation to letters:

وللأعداد قوة روحانية لطيفة فالأعداد من أسرار الأقوال كما أن الحروف من أسرار الأفعال وللأعداد في عالم البشري أسرار ومنافع رتبها الباريء جلت قدرته كما رتب في

Numbers have a subtle spiritual power. The numbers are among the secrets of utterances, like the letters are among the secrets of actions. In the human world, numbers have secrets and benefits which the Creator – majestic is His might – has ordered as He ordered secrets in the

[72] Or 'the triangle', but cf. J. D. Martin, 'Theurgy in the Medieval Islamic World: Conceptions of Cosmology in Al-Būnī's Doctrine of the Divine Names' (master's thesis, Dept of Arab and Islamic Civilizations, The American University in Cairo, 2011), 60.

الحروف أسرار النفع كالدعاء والرقى وغير ذلك... واعلم أن الحروف لا وقت بحصرها وإنما هي تفعل بالخاصية لمن شاء والأعداد تفعل بالطبيعات

letters for use as in supplications and charms and others… Know that the letters are not restricted by certain times, but rather they work according to each property for whoever wills, and the numbers work according to the natures.[73]

The import of these passages is directly at the source of a more forceful expression found in the *Dā'irat al-aḥruf al-abjadiyya* (*The Alphanumeric Circle*), an undated treatise within the Būnī tradition, notably attributed to Hermes:[74]

اذا اردت تعلم قوة كل حرف فانظر ما له من الاعداد وتلك الدرجة المناسبة للحروف فتلك قوته في الروحانيات

When you want to know the power of every letter, look at what number it has: this is the degree that corresponds for the letters, and this is its power among the spiritual beings.

3. Joining the Letters

Finally, a later passage speaks of the operation required to reveal the 'contents' of the letters:

واعلم أن لكل حرف عوالم لا يطلع عليها إلا الذي حظي من اللّه تعالى وإذا كشف لك عن عوالم هذه الحروف فإنك متى جمعت الحروف وأضفت لها الأس تمثل لك ملكا روحانيا مقابلك قضى حاجتك

Know that every letter has sciences to which no one ascends unless through the graces of God Most High, when He reveals the sciences of these letters. Indeed, once you have comprehended (or 'combined') the letters and joined them to the foundation (*al-uss*), they will seem to you like a spiritual possession you have received and which fulfills your needs.[75]

---

[73] Cf. also translation and commentary in *ibid.*, 59–60.

[74] Edited text in Bonmariage and Moureau, *Le Cercle des lettres*, 104.

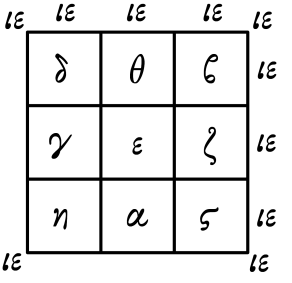
[75] al-Būnī, *Shams al-maʿārif*, 380.

This revealing 'combination' echoes the ones mentioned above (p. 246) when discussing the figurate numbers or 'magic' squares in the geometrical exposition of the Ikhwān.

III. 'Magic' Squares in the Light of Alphanumeric Cosmology

It is often claimed that the earliest Arabic work devoted to the *awfāq* was written by Thābit ibn Qurra,[76] and one of the oldest squares is found precisely in a commentary to Nicomachus' *Introduction*.[77] Another early treatment of magic squares is due to Ibn Ezra, who introduced the Indian numerals to Hebrew script. In the Greek tradition, the association is between grammar and the squares, through the opuscule by the grammarian Manuel Moschopoulos (fl. end of thirteenth century). Interestingly, his *Libellus de inveniendis quadratis numeris* is part of a codex[78] including works on metrics, land division (*mensuratio*, γεωδαισία), on astrolabes, and an *Ars calculatoria secundum Indos*.

I draw attention to the subjects of the codex because they illustrate in their variety the very conjunction of many strands of this research that the 'magic' squares encapsulate: in them the graphic arrangement of a *stoichedon* grid, the same pattern of the Roman *centuriatio*, is allied to a sophisticated arithmetic calculation, and all this conjunction is associated to heavenly bodies and their corresponding zodiacal signs (στοιχεῖα) – and even to the alphabetic aspects through the alphanumeric notation.



SQUARE OF ORDER 3 WITH GREEK NUMERALS [79]

[76] Ibn al-Qifṭī (d. 646/1248) lists an *Epistle on Harmonious Numbers* (*Risāla fī al-ʿadad al-wafq*) among the works attributed to Thābit; Hallum, 'New Light', 46.

[77] Sesiano, 'Les Carrés… de Moschopoulos', 379.

[78] BnF, Supplément grec 652 (ff. 161r–164v).

[79] After BnF, Supplément grec 652, 162r.

It is therefore hardly surprising that the construction of magic squares has been called the 'true purpose' for al-Būnī's cosmological expositions, and it is quite befitting that the construction of the *awfāq* is called the 'building of microcosms.' In fact, an association between a Socratic/Platonic ancient wisdom and the science of the squared numbers is explicit in al-Būnī, particularly in his *al-Uṣūl wa-al-ḍawābiṭ*,[80] a title which from a grammatical angle could be translated as 'Morphological Patterns and Vocalisations.'

E. Ibn ʿArabī

Muḥyī al-Dīn Ibn ʿArabī is not only referred to as 'The Greatest Master' within the Sufi tradition, but more particularly he has been credited with 'the most elaborate system of thought which brings God and man together in the context of the creative power inherent in language,'[81] and drawing closer to us, as 'the Muslim thinker who has dealt more thoroughly with the doctrine of the Logos.'[82] More specifically, the importance of letter speculation in his works has already been the subject of dedicated and thorough works which I can only gratefully cite in the following paragraphs.[83]

Ibn ʿArabī himself explains that he treated the subject of letters in three works.[84] Though this count seems to have remained something of an incomplete project, or in any case not quite in agreement with his extant

---

[80] See Martin, 'Theurgy in the Medieval Islamic World', 64–6.

[81] S. Sviri, '*Kun*-The Existence-Bestowing Word in Islamic Mysticism: A Survey of Texts on the Creative Power of Language', in *The Poetics of Grammar and the Metaphysics of Sound and Sign* (Brill, 2007), 49.

[82] R. Landau, *The Philosophy of Ibn ʿArabi* (1959; Routledge, 2013), 54–5.

[83] See, in the first place, Gril, 'The Science of Letters'; Ebstein, *Mysticism and Philosophy*, 53–7; and a recent related article, C. Addas and M. Chodkiewicz, 'On Two Books Attributed to Ibn ʿArabī: K. al-mabādī wa l-ghāyāt li maʿānī l-ḥurūf and K. māhiyyat al-qalb', *Journal of the Muhyiddin Ibn ʿArabi Society* 62 (2017). Other relevant studies and useful translations include Chittick, *Sufi Path of Knowledge*, and M. Ibn ʿArabī, *Le livre du mîm, du wâw et du nûn (*Kitāb al-mīm wa-al-wāw wa-al-nūn*)*, ed. C. A. Gilis, Héritage Spirituel (Beirut: Dar Albouraq, 2002). More generally, I find W. C. Chittick, 'Ibn ʿArabī and His School', chap. 3 in *Islamic Spirituality: Manifestations*, ed. S. H. Nasr (New York: The Crossroad Publishing Company, 1981), 49–79, to be particularly concise.

[84] Ibn ʿArabī, Kitāb al-mīm…, 40.

works,[85] it is noteworthy that one of these works, the only one mentioned by title, is called *Kitāb al-mabādi'*, the *Book of Principles*, the same title given by Saʿadyā Gaon to his Arabic translation of *Sefer Yetsirah* centuries earlier.

The most important work mentioned, partly because of its solid textual tradition and also because it deals with letters in all their dimensions – and not just with a restricted set – is chapter 2 of *al-Futūḥāt al-makkiyya*, entitled 'On knowledge of the hierarchical degrees of the consonants and vowels in the universe and their counterparts among the Divine Names.' Aside from it, and from many other scattered passages regarding the 'letters', there is also notably chapter 198 of the *Futūḥāt*, 'On the Breath of the All-Merciful (*nafas al-raḥmān*)', where a 'most famous cosmological scheme' is built on the divine breathing of twenty-eight primordial letters.[86]

Ibn ʿArabī has been recognised as a synthesizer of many of the aspects of the science of letters as they are found in earlier authors,[87] combining them into a mystical scheme inextricably integrated, very much 'to the letter,' with the Qur'ānic revelation. Particularly relevant to this research is the influence of the Brethren of Purity on the importance of number in his cosmogony,[88] though I shall not go into details of this.

Ibn ʿArabī appears in some of the lineages of al-Būnī as a transmitter of the science of 'magic' squares. These lineages are understood to be more symbolic than historical,[89] and in this particular case, given that the applications and any comparable detailed treatment about the squares are absent from the Akbarian corpus, they are rather indicative of the shared

---

[85] Addas and Chodkiewicz, 'On Two Books', 106–12.

[86] See W. C. Chittick, 'The Wisdom of the Animals', *Journal of the Muhyiddin Ibn 'Arabi Society* 46 (2009): 28.

[87] E.g. his indebtedness to Tustarī (also cited in al-Būnī's works) to Ibn Masarra, Ibn Barrajān and other Andalusi authors; see Casewit, 'The Forgotten Mystic: Ibn Barrajān (d. 536/1141) and the Andalusian *Muʿtabirūn*', 2, 44, 230; see also Gril, 'The Science of Letters', 140.

[88] G. De Callataÿ, 'From Ibn Masarra to Ibn 'Arabī: references, shibboleths and other subtle allusions to the *Rasā'il Ikhwān al-Ṣafā'* in the literature of al-Andalus', *Studi Magrebini* (Napoli), 2014–2015: 258–61; see also Ebstein, *Mysticism and Philosophy*, 205–12.

[89] Lory, 'La magie des lettres', 98.

underlying cosmology. I would also relate this understanding of a shared basic view to the fact that Ibn ʿArabī was sometimes called 'Ibn Aflaṭūn', the 'Platonist'.[90]

I. The Place of the Letters

The elaborate and subtle understanding of the intermediary realm of the 'letters' in Ibn ʿArabī's letter cosmology has been considered one of his most important contributions to the history of world philosophy,[91] and it is directly related to the science of letters inasmuch as it represents 'the difficult transition of the inexpressible into that which can be expressed.'[92] Ibn ʿArabī uses the Qur'ānic term *barzakh*, the impassable 'isthmus between two seas,'[93] to designate a reality that simultaneously divides and unites two poles, like the 'line' that separates sunlight and shade. As Chittick explains, 'he uses the term Supreme Barzakh (*al-barzakh al-aʿlā*) as a synonym for nondelimited Imagination (*al-khayāl al-muṭlaq* – "absolute imagination").' It is the cosmos itself and in a way the human faculty as well, 'the realm of possible things, which in themselves are neither necessary nor impossible, neither infinite nor finite.' And at the same time, 'it is the Breath of the All-Merciful, which is neither nondelimited Being nor articulated words.'[94] Ibn ʿArabī's doctrine is remarkable in part for bringing out all the implications of this intermediary realm, and for expressing with Qur'ānic imagery how it is at once invisible, spiritual, and intelligible, and also visible, corporeal, and perceptible. 'Since the Guarded Tablet or Universal Soul is a spiritual being, born directly from the First Intellect, it is light. But it represents a movement in the direction of Nature, so it embraces the properties of darkness as well. Like any *barzakh*, it brings together the properties of the two sides.'[95] But as the cosmology goes into detail, complications arise: Ibn ʿArabī identifies

---

[90] Mayer, 'Theology and Sufism', 276.

[91] W. C. Chittick, 'Ibn Arabi', in *The Stanford Encyclopedia of Philosophy*, Summer 2018, ed. E. N. Zalta (Metaphysics Research Lab, Stanford University, 2018)

[92] Gril, 'The Science of Letters', 107.

[93] Qur'ān 25:53, 55:20.

[94] Chittick, 'Ibn Arabi (SEP)', 3.4; S. Akkach, 'The World of Imagination in Ibn ʿArabi's Ontology', *British Journal of Middle Eastern Studies* 24 (May 1997): 102.

[95] S. Murata, *The Tao of Islam: A sourcebook on gender relationships in Islamic thought* (SUNY Press, 1992), 163.

the act of Breathing with that of Imagining, and the world of Absolute Imagination with the Primordial Breath, and also with the Primordial Cloud (*ʿamā'*).[96] This Primordial Cloud is connected in Ibn ʿArabī's writings, and at times even identified to a cosmogonic Primordial Dust or Gas (*habā'*), which was already mentioned in Jābirian literature and in some Andalusian precursors, like Ibn Masarra, as 'the root-foundation of all things' (*aṣl al-ashyā' kullihā*).[97] In the context of the present research, it is important to observe that the above-mentioned Christian *abecedarium* rite, in which a foundation through letters from dust (ashes) is enacted, is as direct a performance as possible of this very early Islamic cosmogonic doctrine. I shall not go into further details of the various levels and correspondences, but instead mention some other notable aspects.

One of the distinguishing traits of this iteration of the doctrine of the intermediary realm, is the idea of the divine love: 'He desired to make Himself known, so that they might know Him, and so the Cloud comes to be; it is called the Real Through Whom Creation Takes Place. The Cloud is the substance of the universe (*jawhar al-ʿālam*), so it receives all the forms, spirits, and natures of the universe; it is a boundless receptacle. This is the origin of His love for us.'[98] And in this it will be noted how once again, like at the end of the previous chapter, we are suddenly involved in a Christic-related imagery, and we may remember Dante's universal book 'legato con amore.' The role of the letters of the *logos* in the cosmology of Ibn ʿArabī is in fact remarkably *ʿĪsawī*, that is, related to Jesus as an Islamic prophet, for 'the knowledge of Jesus is the knowledge of the letters' (*inna al-ʿilm al-ʿīsawī huwa ʿilm al-ḥurūf*).[99] Regarding the cosmic architecture based on the twenty-eight primordial letters, and thinking of this Christic connection, the tradition of the fourteen stations of the *via crucis* is an example that stands out as a promising avenue of further research.

---

[96] Akkach, 'The World of Imagination', 109.

[97] Ibn Masarra could not be clearer: *inna al-ḥurūf hiya al-habā'… wa-minhā ta'allafa al-amr*, 'the letters are the Dust… and the command (*logos*) is composed by them'; Garrido Clemente, '*K. Jawāṣṣ al-ḥurūf* de Ibn Masarra', 62. See Ebstein and Sviri, 'The So-called *Risālat al-ḥurūf*', 223. Cf. the similar use of *aṣl* by the Ikhwān; see above p. 248.

[98] M. Ibn ʿArabī, *Al-Futūḥāt al-makkiyya*, 4 vols. (Cairo: Dār al-Kutub al-ʿArabiyya al-Kubrā, 1911), II.331.23–4.

[99] *Ibid.*, I.168.5; see also Addas and Chodkiewicz, 'On Two Books', 110.

All this is naturally inseparable from the divine creative imperative, also taking into account, as with the case of Jesus, the more merciful aspects of the divine: 'Since God is … the cause of the existence of everything in the world … everything tends towards Love (*raḥma*), because He created them and brought them into manifestation within the Cloud (*ʿamā'*) which is the Breath of the All-Loving (*nafas al-raḥmān*). They are like the letters in the breath of a speaker in their points of articulation (*makhraj*)… it is a world ever uttered anew (*ʿālam muḥdath*) – don't you see He is called the Arranger (*al-Mudabbir*), the Differentiator (*al-Mufaṣṣil*)?'[100] The reference to the phonetic point of articulation brings us back to the linguistic aspect and goes hand in hand with letter speculation. As could be expected, the writings of Ibn ʿArabī have a persistent rhythm of allusions to, or rather intimations of, a *lughawī* (traditional linguistic) dimension, a wealth of linguistic insights in a broad traditional sense. Not the least of the consequences of this tight interplay between the linguistic and the metaphysical, especially in view of the cosmogonic passage just cited, is the understanding that we, on our puny human level, 'articulate words in our breath just as God articulates words in His All-Merciful Breath.'[101]

II. Letters and Numbers

Regarding the intimate relation between number and letter, aside from the isopsephic explanations that abound, and aside from the numerical structure evinced by the cosmology and in which an air of familiarity with the Ikhwānian cosmology is clear, there are specific mentions in the *Futūḥāt* of a common science of the 'properties of numbers and letters' (*ʿilm khawāṣṣ al-aʿdād wa-al-ḥurūf*), or simply 'of numbers and letters,' as a 'science of the saints' and as a prerogative of some of the stations (*manāzil*) of the travelling initiate.[102]

In chapter 13 of the *Book of the Mīm, Wāw and Nūn* we also have a fine example of the complete integration of the alphabetic symbolism with the arithmetic operations:

---

[100] Ibn ʿArabī, *Futūḥāt*, II.465.25–28, discussed in Chittick, *Sufi Path of Knowledge*, 338, with a slightly different interpretation.

[101] Chittick, 'The Wisdom of the Animals', 28. Regarding the concept and the practice of articulation from a traditional musical point of view, the works of the French lute master Marc Loopuyt are an invaluable reference; see in particular M. Loopuyt, 'Dans l'océan des musiques traditionnelles', *Ultreïa!/Cahiers métaphysiques*, no. 16 (2018): 165.

[102] E.g. chapters 354 and 357, Ibn ʿArabī, *Futūḥāt*, III.246.27 and 261.34.

فإذا ضربت «ب» في «ج» كان الخارج «و» فلها أيضا من قوة أبويها

If you multiply ب [2] times ج [3], the result is و [6], which shares also in the power of its two parents.[103]

And this is naturally followed by the explanation that the *wāw* can produce the effect (*yafʿalu al-fiʿl*) of six, and it also has the power of two and three.

III. The Three Modes

We find also in Ibn ʿArabī an example of the awareness of the three modes of the 'letter-number':

فاعلم أن الحروف لها خواص	Know that letters have properties, and that
وهي على ثلاثة أضرب منها	they are of three types: written (*raqmiyya*), pro-
حروف رقمية ولفظية ومستحضرة	nounced (*lafẓiyya*), and evoked (*mustaḥḍara*);
وأعني بالمستحضرة الحروف	and I mean by 'evoked' the letters which a man
التي يستحضرها الإنسان في	evokes and makes present in his fancy and ima-
وهمه وخياله ويصوّرها	gination, and gives form to them.[104]

In this triple classification we have again with little variation the threefold character of the alphabetic elements: the graphic aspect, the phonetic aspect, and the third mental aspect, which may correspond to the arithmetic, diagrammatic aspect we have found elsewhere and which is related to creativity, as in 'design', involving the composition of new images by the form-giving, or 'in-formative' faculty (*al-quwwa al-muṣawwira*).[105]

IV. The Living Letters

There is an aspect of Ibn ʿArabī's alphanumeric science that lies outside the boundaries of my research, but which it is nonetheless fitting to mention, not least because it belongs to a long doctrinal thread with parallels in other traditions. I refer to the relation between the divine 'letters' of the macrocosmic universe and their intimate relation with the microcosmic

---

[103] Ibn ʿArabī, Kitāb al-mīm…, 62.

[104] Ibn ʿArabī, *Futūḥāt*, I.190; cf. Gril, 'The Science of Letters', 123.

[105] Cf. Akkach, *Cosmology and Architecture*, 40–42.

universe represented by the exemplars of human perfection.[106] When it is said that 'the science of letters is a science of the saints,' it does not only mean that the saints penetrate its mysteries intellectually, but also that they embody the arcana of the letters. It is in them, par excellence, that the ontological-epistemological duality of the letters is fully realised, for 'language and *wilāya* are intrinsically bound up.'[107]

Within Islamic prophetology, this view of the divine letters belongs primarily in the Muḥammadan line, where it is related fundamentally to the exalted inner nature of the Prophet (*nūr Muḥammad*, 'the light of Muḥammad'), and thereafter to the Shīʿī lineage of the Imams – as is to be expected, it had a fruitful history in Ismāʿīlī cosmology. Secondarily, and as elaborated in great detail by Ibn ʿArabī, this view relates to the spiritual heritage of the Prophet, hence to all his 'friends' (*awliyā'*),[108] and it has to do with 'how inextricably linked the science of letters and spiritual realization are.'[109]

Now, instead of devoting more lines to this somewhat peripheral topic, I shall only illustrate it with two brief poems chosen to represent two major phases. The first is from one of the many poems attributed to Imām ʿAlī:

وتحسب أَنّك جرمٌ صغير
وفيك انطوى العالم الأَكبر
وأَنت الكتاب المبين الّذي
بأَحرفه يظهر المُضمر

Although you think of yourself as a tiny speck,
Within you the great universe is contained;
You are yourself the book that makes things clear
Whose letters reveal what is concealed.[110]

---

[106] See Ebstein, *Mysticism and Philosophy*, 108ff.

[107] S. Sviri, 'Words of Power and the Power of Words: Mystical Linguistics in the Works of al-Ḥakīm al-Tirmidhī', *Jerusalem Studies in Arabic and Islam*, no. 27 (2002): 232. Casewit sees in this 'quasi-incomprehensible ontological in-between-ness of the Universal Servant' 'a solution for the classical philosophical conundrum of how the One relates to multiplicity,' Casewit, 'The Forgotten Mystic: Ibn Barrajān (d. 536/1141) and the Andalusian *Muʿtabirūn*', 343.

[108] See Ebstein, *Mysticism and Philosophy*, 123ff., 143, 146–50;

[109] Gril, 'The Science of Letters', 136.

[110] ʿAlī ibn Abī Ṭālib, *Min al-shiʿr al-mansūb ilā al-Imām al-Waṣī ʿAlī ibn Abī Ṭālib*, ed. ʿAbd 'al-ʿAzīz Sayyid al-Ahl (Beirut: Dār Bayrūt, 1973), 75. I am grateful to Reza

And the following lines are from Ibn ʿArabī's poetry collection, *Tarjumān al-ashwāq*:

كنّا حروفا عاليات لم نقل
متعلّقات في ذرى أعلى القلل
أنا أنت فيه ونحْن أنت وأنت هو
والكلّ في هو هو فسل عمّن وصل

We were letters, exalted! not yet uttered,
Held aloft in the keep of the Highest of Summits,
I Therein am Thou, and we are Thou,
And Thou art He, and All is in He is He –
Ask of any that so far hath reached.[111]

F. Conclusion to Part III

After having had a glimpse at the beginnings of systematisation of the 'science of letters and numbers' in the three Abrahamic traditions, it is important to emphasise how influential all these representatives would be, not only within each tradition, but also in countless exchanges, cross-pollinating each other's tradition in theology, philosophy and occult sciences.

The *Sefer Yetsirah* is widely considered, with the *Sefer ha-Bahir* (to a lesser extent), the main source of Kabbalistic speculation, or rather, put simply, the precursor and main source material of the Kabbalah as it unfolded through the centuries. It is no exaggeration to say that the defining traits of Kabbalistic doctrines can all be said to pass through the *Sefer Yetsirah*. The single clearest and sufficient example is that this is the text which put into circulation the term *sefirah* with a cosmological meaning.

Eriugena and Aquinas represent each too a historical watershed, a repository and a perennial reference for the Christian tradition in their more contemplative and theological aspects. Something similar happens with the role played by al-Būnī and Ibn ʿArabī in the Islamic tradition, where they have been for centuries the fountainheads of theurgic lore and philosophical Sufism respectively. A major related development in the

---

Shah-Kazemi for this reference.

[111] M. Lings, *Sufi Poems: A Mediaeval Anthology* (Cambridge: Islamic Texts Society, 2004), 64–5; trans. Lings.

Islamic world would be the emergence of an openly *Ḥurūfī* or 'Letterist' movement led by Faḍl Allāh Astarābādī (d. 1394), who with his *Jāvidān-nāma*, the *Book of Eternity,* started a messianic movement of lasting influence. His work is not only related to the teachings of the authors mentioned above, but it cites St John's Gospel and other Christian writings. Moreover, the *Jāvidān-nāma*'s cosmology is based on a set of 28 or 32 'most basic constituent units of the metaphysical language.'[112]

[112] See Mir-Kasimov, *Words of Power*, 50–51, 163; and S. Bashir, 'The Alphabetical Body: Ḥorūfī Reflections on Language, Script and the Human Form', in *Religious Texts in Iranian Languages. Symposium held in Copenhagen May 2002*, ed. M. Timus, F. Vahman and C. V. Pedersen (Royal Danish Academy of Sciences and Letters, 2007), 287–89.

Conclusion

After having walked through so many time doors and after the comparative work that hinders sustained concentration on one single point, there is an inevitable feeling of leaving loose ends. In order to address this, I shall now look at the work done from two perspectives, and in so doing I will be making explicit several conjectures implicit in my earlier deliberations. One perspective is conceptual or philosophical, partly recapitulating some of the main themes and partly commenting on some open avenues of research and further comparative study, also with a view to applications in other scholarly fields. Another perspective, historical, to try to contemplate and make sense of the whole narrative from a broader historical point of view.

A. Conceptual Conclusion: Echoes and Ramifications

I. Art, Artistry and the Arts

This work is a reflection about art insofar as it never strays from the demiurgic vein shared by the *Timaeus* and the *Sefer Yetsirah*, and this with attention to the two inseparable aspects of the word κόσμος – beauty and order. I have discussed the cosmogony related to them, but I find of great interest too the implications regarding the creative process in general.

Since the *Deus faber* of my account is a geometer and a surveyor, and since his creation is based on a *stoichedon* grid pattern, because 'the world is the field' of the land-surveying Creator,[1] how alphanumeric is essentially, or at least should be *de jure*, human creativity? If art is based on μίμησις in the sense of an imitative participation, and if in the words of Lamennais,[2] '*l'art est pour l'homme ce qu'est en Dieu la puissance créatrice*,' just how mathematical or geometrical must human art be to

[1] Cf. E. A. Zaitsev, 'The Meaning of Early Medieval Geometry: From Euclid and Surveyors' Manuals to Christian Philosophy', *Isis* 90, no. 3 (1999): 546–52.

[2] Cited in Tatarkiewicz, *History of Six Ideas*, 254.

emulate its divine model? And if the demiurge, akin, like Apollo, to a boundary-setting Hermes, is a Magician in his 'spelling' and combining in acrostics and pangrams the letters of His word and His world, just how magical is any human creativity called to be? And if creation follows the logic of a grammar, how logical and grammatical should every human design be?

In relation to the magical view of creation, it must also be remembered that the divine creation effected in the alphanumeric elements, or through them, seems to be an immaterial creation, or only material if we understand that it is not quite perceptible matter that is involved, but an intermediate realm, as is the phonetic reality of language when compared to the materiality of writing. To what extent does every human art also belong to an intermediary realm?

II. The Universe as Book

This major theme runs practically unmentioned through the preceding pages, and it warrants some elaboration. It is at root the idea of 'the legibility of the world', either as a cipher to be decoded or as a plain book, an epiphany of meaning.[3] In this study in particular, and as already explained, the notion of legibility has been expanded to include 'countability', 'readability', for if the letters of the book are proved to be at the same time some kind of multifarious 'numbers', then surely the book itself must be some kind of universal ledger, or even more specifically, a text full of mathematical musicality.

Andrei Lebedev has been studying important precedents of this idea, the γράμματα τῆς φύσεως, 'letters of nature', in Heraclitus, whose 'cosmos', he affirms, 'should be read and interpreted like a book or an oracle, not explained by the action of blind mechanical forces.'[4] And this reveals the other crucial aspect of the world as book, namely, the symbolism of the world, or perhaps rather the semioticity of the world. This idea is strongly reinforced by the concept of our *stoicheion*, which by its very intensive nature invites to, or necessitates, a kind of reading which is more akin to

---

[3] The phrase above is from H. Blumenberg, *Die Lesbarkeit der Welt* (Frankfurt am Main: Suhrkamp, 1981), who pondered long on these issues. Many valuable references are given in E. Rothacker and W. Perpeet, *Das 'Buch der Natur'. Materialien und Grundsätzliches zur Metapherngeschichte* (Bonn: Bouvier Verlag H. Grundmann, 1979).

[4] Lebedev, 'The Metaphor of *Liber Naturae*', 254.

the interpretation of dreams and oracles. 'The most sophisticated reader grasps the whole *logos* as a unity, but does not dissect it into letters and syllables […] reading the book of nature is also a kind of *manteia*, the art of interpretation of oracles.'[5] It is no wonder that we find confirmation in an ancient treatise of oneiromancy:

εἰ δὲ σημαίνει μὲν διὰ πάντων πάντα, ἅτε ἀδελφῶν ὄντων τῶν ἐν ἑνὶ ζῴῳ, τῷ κόσμῳ καὶ ἔστι ταῦτα γράμματα παντοδαπά, καθάπερ ἐν βιβλίῳ, τοῖς οὖσι, τὰ μὲν Φοινίκια, τὰ δὲ Αἰγύπτια καὶ ἄλλα Ἀσσύρια, ἀναγινώσκει δὲ ὁ σοφός[...] καὶ ἄλλος ἄλλα καὶ ὁ μὲν μᾶλλον, ὁ δὲ ἧττον, ὥσπερ ὁ μὲν κατὰ συλλαβάς, ὁ δὲ ἀθρόαν τὴν λέξιν, ὁ δὲ τὸν λόγον ὁμοῦ·

'if all things are symbols appearing through all things, being like siblings within one single living creature, the cosmos, so also they are written in characters of every kind, just as those in a book, some of which are Phoenician, some Egyptian, and others Assyrian; and the wise person reads them… One reads some of them and another reads others, one reads more and another less. In the same way one reads them by syllables, another reads the complete phrase, another the whole story.'[6]

A notable system of alphanumeric components which requires mention in this regard is that of playing cards. As they have been known to Europe since around the 14th century,[7] playing cards summarise in a truly remarkable way many of the traits of the alphabetic and numerical systems we have been studying: they arrived from the east during the High Middle Ages, they are sequential and combine not only letters and numbers, but also a clear fourfold elementary scheme in the shape of the four suits, they are related to children in their ludic aspect, and they have always lent themselves to mantic purposes, to the point of becoming, as in the case of the Tarot deck, divination devices par excellence. The unusual adjective *stoicheiotical* applies naturally to them, as through the visual aspect of their *patterns* (their individual designs), by combining the pictorial with the alphanumeric, they are probably as close as an object can be to embodying the semantic plenitude of the alphanumeric system, including its magical connotations. As such a compact of qualities they

---

[5] Lebedev, 'The Metaphor of *Liber Naturae*', 251.

[6] Synesius, *De insomniis* 2.131C– 132A. Cf. also Plotinus II,3,7.

[7] J. M. Hermans, 'Playing-cards, Their Historical Production and Conservation', *The Conservator* 11, no. 1 (1987): 51

also represent, as few other artefacts do, what a symbol is, possessed of an inextricable and immediate sense, at once pictorial and alphanumeric, and somehow organically attuned to the very fabric of reality.[8]

Perhaps then one conclusion of this study is simply that alphanumeric elements, those famous 'letters' used for the Divine Cosmogonic Spell and for other all too human crafty spells, should really be treated as actual symbols in the sense used by Synesius: like meaningful living parts of a living organism. Every question of 'reading' the *liber mundi* has to be understood in this light, and certainly more in a synaesthetic way than any ordinary idea of reading usually is. Here, as in so many other aspects, the Hermetic character of the universal letters comes to the fore again, as does Plato's *Timaeus* (52b), where we (humans) are described as ὀνειροπολοῦμεν βλέποντες, 'seeing in dreams,' when we try to grasp the nature of matter.

III. Physics and Modern Physics

This work is about physics. Since it is about the elements, it is about the material world, about matter and about atoms, but we saw early on that the στοιχεῖα are understood as ἐλάχιστα (*elachista*, Lat. *minima*) in a very nuanced way, being material and yet immaterial, ordered and dancing. As seen clearly by Weiss, '*stoicheion* is not simply a name shared in common by two concepts; it also reflects a common understanding of letters and physical elements as components with an atomic character.'[9] It turns out that this conception of the *atoma* or ultimate indivisible particles is quite close to contemporary cutting-edge accounts of reality, according to which 'the fundamental building blocks of matter are not particles, but continuous fluid-like substances known as "quantum fields"' which dance overlapping with one another.[10]

---

[8] In later times we find a striking example of their usage *in divinis* in the mystical visions of a Carmelite nun who played cards with Jesus Christ himself; see J. Serrado, 'Playing Cards with God: The Visions of the Portuguese Nun, Mariana da Purificação', *Early Modern Women* 12, no. 1 (2017): 143–151. The parallels with Hindu and Greek sources, especially in the playful figures of Krishna and Hermes, are evident.

[9] T. Weiss, 'On the Matter of Language: The Creation of the World from Letters and Jacques Lacan's Perception of Letters as Real', *The Journal of Jewish Thought and Philosophy* 17, no. 1 (2009): 106.

[10] Cf. D. Tong, *The Real Building Blocks of the Universe*, lecture given at The Royal Institution, London, November 2017.

This is in line with Proclus' assertion that in the study of the sensorial world it is necessary to combine always physical theory with mathematics,[11] and it is not far from the furthest reaches of contemporary mathematics, where some argue for a 'Platonism on steroids: that external physical reality is not only described by mathematics, but that it is mathematics,' asserting that 'the mathematical structures in Plato's *realm of ideas*' or the 'mindscape' of some mathematicians 'exist "out there" in a physical sense.'[12]

One striking analogy between these correlated fields of modern physics and ancient alphanumeric cosmology is found in the structural resemblance between the periodic table of elements and the recently elucidated phonological arrangement of the Greek κνάξ pangram: κνὰξ ζβὶ χθὺ πτὴς φλεγμὸ δρώψ, in which numerical and phonetic values combine to produce a synthetic arrangement in tabular form, indeed a 'periodic table' of Greek *elementa*:[13]

Κ	Ζ	Χ	Π	Φ	Γ	Δ
Ν	Β	Θ	Τ	Λ	Μ	Ρ
Α	Ι	Υ	Η	Ε	Ο	Ω
Ξ			Σ			Ψ

Without entering into the details, it will be noted, for example, that the third row contains all the vowels, and that the fourth row contains all three sigmatic consonants. This arrangement, including as it does all twenty-four letters, is a graphic representation of an alphabetic pleroma, a totality, and it gives an intimation of the subtleties underlying many similar arrays found in magical literature. This fundamental physical reality, conceived as fields or mathematical structures, is in fact a mediator between what our intellect can comprehend of order and necessity, and what our senses can perceive of beauty and contingency. As Nicomachus puts it, they (these number-letters) are bridges and ladders to the supernal reality.

The intermediary reality they constitute is matter for the lower world, but it is matter in the sense of a 'literary matter';[14] more precisely, it is the

[11] Cited in Caiazzo, 'La forme et les qualités des éléments', 314.

[12] M. Tegmark, 'The Mathematical Universe', *Foundations of Physics* 38 (2008): 126.

[13] Details in Lougovaya, 'A Perfect Pangram', 180–85. This pangram goes back as far as at least 200 AD, with a possible earlier origin.

[14] As when there is question of 'the Matter of Britain' or 'the Matter of Troy.'

revealed books themselves, which have all a liminal status too: they are the matter for the demiurge to do his craft, writing as a scribe, and they are matter from which the lower realities (we and our fellow 'readers' in creation) read from.

IV. Linguistics, Psychology and Cosmology

This work is about linguistics in a number of its sub-disciplines, as can be seen in my earlier discussions of morphological, prosodic and other such issues, but the crucial linguistic aspect of my research is the twofold segmentation mentioned in Chapter 6.[15] In linguistics, twofold segmentation refers to the two-layered construction of meaning proper to human language: from the meaningless distinctive elements like letters or phonemes, to the meaningful signs, like words or morphemes. When considered from a cosmological point of view, however, the distinctive elements, our 'letters' are, as we have amply observed, far from meaningless, but rather each one of them considered a 'name' and an 'infinite' of its own. The point of departure of every cosmological understanding of language is based on a modified understanding of the twofold segmentation, *sub specie aeternitatis*, for which the 'distinctive' elements discerned in the second level of segmentation are far from meaningless.[16]

This is also intimately associated with Whorf's conviction that 'science, if it survives the impending darkness, will next take up the consideration of linguistic principles,' and his detailed description of a series of seven initial ontolinguistic planes, from the acoustic to the syntactic, and 'on to further planes still, the full import of which may some day strike and stagger us.'[17] His reference to an intermediary realm is strikingly close to those mentioned in the previous section:

> the physical world may be an aggregate of quasidiscrete entities… not fully understandable as such, but rather emergent from a field of causes that is itself a manifold of pattern and order… As physics explores into the intra-atomic

---

[15] See above, p. 165.

[16] This is studied in its historical relation to atomism in F. Hallyn, 'Le Modèle alphabétique de l'atome ancien', *Alliage* 57-58 (July 2006).

[17] Whorf, 'Language, Mind, and Reality', 249, 270.

phenomena, the discrete physical forms and forces are more and more dissolved into relations of pure patternment.

V. Metaphysics and Theology

This work is about metaphysics and theology insofar as it is a study of principles, of the foundations of existence and of the constitution of matter in different levels, drawing from the language of philosophers as much as from the language of theologians. As already discussed in Chapter 8 above, our interest here has to do with that 'matter' or 'receptacle' or 'heterogeneous object' 'whose only positive attribute is the necessity by which the hypothesis of its existence imposes itself.'[18]

Characterised as 'difficult and obscure' (*Timaeus* 49a3) or 'invisible and amorphous' (*Timaeus* 51a7), the matrix of the alphanumeric elements is at once solar and lunar. The στοιχεῖα are paradoxical in that they are simultaneously luminous and obscure. They are the conglomerate of forms which make possible our *informatio*,[19] our 'internal constitution', hence our individual intellectual discernment through delineation, and at the same time they are in themselves a complex, a *pleroma*, of impenetrable and shifting ambiguity, like snakes, and like ungraspable utterances in the air, the *corpus incorporeum* of Calcidius.[20]

Several aspects of this 'matter' have been discussed sufficiently above, and to close this section I would just like to recall and specify the architectural cosmogonic role of the στοιχεῖα. In view of their attributes and functions, and after such a long exploration, I find that the most apt image for the letter-numbers are those stakes or pegs used by land surveyors as reference points to *determine* the construction of new buildings. The first step is to extend a measuring tape through the centre of the area, this is called a baseline; then a grid is established, with the grid lines often identified by marking the stakes, alphabetically in one direction, and numerically in the other direction. These stakes are only temporary,

---

[18] Brisson, *Le même et l'autre*, 208.

[19] Ar. *taṣawwur*; see R. Capurro, *Apud Arabes: Notes on Greek, Latin, Arabic, Persian, and Hebrew Roots of the Concept of Information*, 2014, II.1.

[20] Calcidius, *Plato Latinus, vol. 4:* Timaeus, A Calcidiu Translatus Commentarioque Instructus, ed. R. Klibansky and J. H. Waszink (London and Leiden: Warburg Institute / E. J. Brill, 1962), CCCIX, 314. In the twelfth century, Hermann of Carinthia (*De essentiis*, 62rA) extends this oxymoron explicitly to the elements.

they are an intermediate stage between the original blueprint and the actual building.

אֵיפֹה הָיִיתָ בְּיָסְדִי־אָרֶץ הַגֶּד אִם־יָדַעְתָּ בִינָה: מִי־שָׂם מְמַדֶּיהָ כִּי תֵדָע אוֹ מִי־נָטָה עָלֶיהָ קָו:

ποῦ ἦς ἐν τῷ θεμελιοῦν με τὴν γῆν; ἀπάγγειλον δέ μοι εἰ ἐπίστῃ σύνεσιν, τίς ἔθετο τὰ μέτρα αὐτῆς εἰ οἶδας ἢ τίς ὁ ἐπαγαγὼν σπαρτίον ἐπ᾽ αὐτῆς;

Ubi eras quando ponebam fundamenta terræ? indica mihi, si habes intelligentiam. Quis posuit mensuras ejus, si nosti ? vel quis tetendit super eam lineam?

Where were you when I was elementing the earth? Tell me, if you have understanding! Who determined its measurements – surely you know! Or who stretched the baseline upon it?[21]

B. Historical Conclusion: The Alphanumeric End

Around the medieval Mediterranean, and once again spreading from the East, a great wave of change is moving westward from around the eighth century. It is so fundamental in nature and so momentous in its incalculable effect, that I can only liken it to the great shifts of tectonic plates, determining in discreet yet decisive ways the future of the great cultures built upon them. I refer to what might be named 'the alphanumeric scission', the separation between letters and numerals which resulted directly from the adoption of the Indian numerals.[22] Far from happening as if by decree in a once and for all manner, this adoption took place over several centuries, gradually and irregularly. Its landmarks have been charted extensively for the different cultures and their respective writing systems.

The adoption of the numerals into Arabic has an important signalling event in the visit of a group of scholars from India to Baghdad in 771.[23]

---

[21] Job 38: 4–5; NRSV, slightly modified. 'I was elementing' renders Heb. *yasdy*, based on the same root of *yisud*, 'foundation', and of *yesod*, one of the most common Hebrew terms for 'element'.

[22] G. Ifrah, *The Universal History of Numbers: From Prehistory to the Invention of the Computer*, trans. D. Vellos et al. (New York: John Wiley & Sons, 2000), 361, compares their importance to the mastery of fire and the invention of the wheel. Notably, in 2006 Burnett had already started looking into the 'impact of Indian numerals on the mentality of Western scholars' in his 'The Semantics'.

[23] See P. Kunitzsch, 'The Transmission of Hindu-Arabic Numerals Reconsidered', in

Prior to that embassy, there had been an important mention of the numerals in 662, by the Syrian bishop Severus Sebokht, giving a strong indication of the importance of Syriac in the transmission of knowledge across cultures. This famous testimony by Sebokht may indicate not only an earlier Arabic acquaintance with 'the nine symbols', but also, through the Greek church, a first point of contact with the Byzantine Greek-speaking world, where otherwise the usage of the numerals was very limited until the thirteenth century. The first Greek work to systematically use the new numerals is the Μεγάλη καὶ Ἰνδικὴ Ψηφιφορία (*The Great and Indian Computation*) authored by Maximus Planudes in 1252.[24] Before that there is uncertainty, but we know that the most ancient manuscript of Euclides' Στοιχεῖα, dating from 888, contains glosses with the Indian numerals which predate Planudes' work.[25] Hebrew scholarly literature was intimately related to Arabic scholarship through the use of the Judeo-Arabic script; the introduction of the positional system is due to Abraham ibn Ezra in the early twelfth century, using initially a hybrid notation with the opening letters of the Hebrew alphabet.[26] In Latin-speaking Europe, the first preserved example comes from the Codex Vigilanus, dated 976,[27] but it was much later, in the twelfth and thirteenth centuries, through the scholarly activities based in Sicily and Toledo, that the usage of the new numerals would be consolidated and disseminated.[28] A remarkable 1153 manuscript from Palermo illustrates the complexity of the situation: it is a trilingual psalter in which numerals appear in alphabetic notation in Greek

---

The Enterprise of Science in Islam: New Perspectives, ed. J. P. Hogendijk and A. I. Sabra (Cambridge, MA: MIT Press, 2003), 3ff. and J. L. Berggren, *Episodes in the Mathematics of Medieval Islam*, 2nd ed. (New York: Springer, 2016), 32–3.

[24] Chrisomalis, 'Re-evaluating Merit', 2.

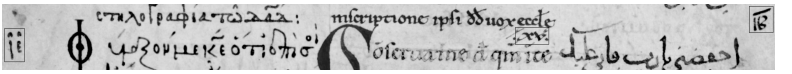
[25] See N. Wilson, 'Miscellanea Palaeographica', *Greek, Roman and Byzantine Studies*, no. 22 (1981): 402–404.

[26] C. Burnett, 'The Transmission of Arabic Astronomy via Antioch and Pisa in the Second Quarter of the Twelfth Century', in *The Enterprise of Science in Islam: New Perspectives*, ed. J. P. Hogendijk and A. I. Sabra (MIT Press, 2003), 39; N. Ambrosetti, *L'eredità arabo-islamica nelle scienze e nelle arti del calcolo dell'europa medievale* (Milano: LED Edizioni Universitarie di Lettere Economia Diritto, 2008), 110.

[27] Burnett, 'The Transmission', 29; Ambrosetti, *L'eredità arabo-islamica*, 96.

[28] See Burnett, 'The Transmission', 29; and also *passim* C. Burnett, *Numerals and Arithmetic in the Middle Ages*, Variorum Collected Studies 967 (Farnham, UK: Ashgate, 2010).

(left), in Indian notation in Arabic (right) and in Roman numbers in Latin (centre).[29]



In the light of such a panorama, and craving the conceptual clarity afforded by a time frame, I assume as two significant boundaries of this long process of adoption, first, the publication of al-Khwārizmī's *Kitāb al-jamʿ wa-al-tafrīq bi-ḥisāb al-hind*, *The Book of Addition and Subtraction According to the Hindu Calculation*, dated sometime after 800;[30] and, second, the publication in 1202, in Florence, of Fibonacci's *Liber Abaci* –[31] I do so on the understanding that both publications marked, rather than the beginning, an advanced stage in the long process of adoption of the Indian numerals in their respective circumstances.

Although it is impossible to ascertain the many consequences brought about by the usage of the new numerals, I would like to observe how, on a fundamental level, and in the cases of languages from Semitic and Indo-European stock, this new system of numeric notation lays bare for the first time in graphic fashion the decimality underlying their numerical terminology.[32] As has been mentioned previously,[33] when speaking of the difference between *Zahlwort* and *Ziffer*, writing 2, 20 and 200 is as closely descriptive of the underlying decimality as writing β, κ and σ is foreign to it in its arbitrariness. Apart from the obvious and recognised advantages that this brought to all the fields dependent on computation, like accounting and combinatorics, it is not hard to surmise that a long-term cascade effect may also have impacted the most disparate fields of knowledge.

---

[29] British Library, Harley MS 5786, 14v, see Ambrosetti, *L'eredità arabo-islamica*, 102.

[30] Only extant in Latin translations of the twelfth and thirteenth centuries, see Berggren, *Episodes*, 32; Kunitzsch, 'The Transmission', 3.

[31] For a vernacular, crafts related tradition parallel to the channels that converged in Fibonacci's work, see J. Høyrup, *Jacopo da Firenze's Tractatus Algorismi and Early Italian Abbacus Culture* (Birkhäuser Verlag, 2007).

[32] 'In fact, a great majority of the world's number systems, across all of its roughly 7,000 languages, reveal decimality in one form or another'; see C. Everett, *Numbers and the Making of Us: Counting and the Course of Human Cultures* (Cambridge (MA): Harvard University Press, 2017), 65.

[33] Above, p. 38.

Many major cultural developments took place around the Mediterranean in the High Middle Ages, and there have been attempts to relate them in a grand theory. Focusing on the thirteenth century, the 'age of the *summae*,'[34] Erwin Panofsky famously drew a detailed analogy between the origins of scholasticism and the flourishing of Gothic architecture, using the term *manifestatio*, in the meaning of 'elucidation of faith by reason,' as the 'first controlling principle of Early and High Scholasticism.'[35] The requirements of the classic High Medieval *Summa* were three: *totality* (sufficient enumeration), *systematic arrangement* (sufficient articulation), and *distinctness and cogency* (interrelation). These principles in themselves were hardly new, but the scholastics, in contrast to the thinkers of previous centuries, 'felt compelled to make the orderliness and logic of their thought palpably explicit.'[36] And I wonder, could not a similar observation be made in the sister traditions, considering for instance the works of Maimonides, and setting the Ikhwān's *Rasā'il* as a comparable edifice? My time frame is wide, or perhaps simply and avowedly, loose, because it is given by the undecidable dates of the alphanumeric scission.

It is said that through various chains of transmission, there was a rebirth of mathematics in Europe in the twelfth century.[37] These are the times of the rise of the universities and the renovated reception of Aristotle.[38] In the field of music, which in the guise of grammar and arithmetic is completely central to this enquiry, it was the Paris school of the thirteenth century which introduced the mensural notation still used today, articulating music through an exact and systematic division of time.[39] In a story with a remarkable 'Pythagorean' echo, it is said that also in the thirteenth century, upon hearing the rhythmic hammering of the smiths, Jalāl ad-Dīn Rūmī was inspired to devise the music and the dance of the Mevlevi *sema*, still

---

[34] A. Hyman, J. J. Walsh and T. Williams, *Philosophy in the Middle Ages: The Christian, Islamic, and Jewish traditions* (Hackett Publishing, 2010), 409.

[35] E. Panofsky, *Gothic Architecture and Scholasticism* (New York: Meridian Books, 1957), 30.

[36] *Ibid.*, 34.

[37] J. Sesiano, *The* Liber Mahameleth*: A 12th-century mathematical treatise* (Springer, 2014), xiii.

[38] Hyman, Walsh and Williams, *Philosophy in the Middle Ages*, 409.

[39] Panofsky, *Gothic Architecture and Scholasticism*, 39.

practiced today, and this brings us to the other important related field of the contemplative orders and mystical movements.

Just as the Kabbalah was becoming a distinct movement, we observe how a number of Christian monastic orders began to be defined. Carthusians, Cistercians, Franciscans and Dominicans, all originate or crystallise within a span of less than two centuries. Something similar took place in the Islamic world with the consolidation of the Qādirī, Shādhilī, Naqshbandī, Kubrawī and Mevlevī Sufi orders.

*

Willing to make sense of all those developments, and in numerous others which it would be out of place to mention, and all in the light of the alphanumeric scission, I go back to the basic observation of a division: as the previously united aspects of the alphanumeric element broke, so must have broken something in many fields of human endeavour. As number and letter were gradually being revealed as separate entities, so in many other fields, what was previously a cryptocrystalline harmony became an explicit harmony,[40] a shining crystal.

Similar and complementary observations could be made about the beginning of the alphanumeric age: I am left to wonder how inscrutably related may be the incipient letter-number conjunction and the momentous developments experienced by Greek culture after the sixth century BC. Closer to parts of this research, for instance, is Luz's observation that the middle of the third century BC may be considered a time of special flourishing of the *technopaignia* in their many dimensions.[41]

At the closing of this era of sorts, over the centuries-long period during which the letter-numeral separation was effected, it is as if number was laid bare, no longer clothed in the same way as words. Naturally, everything had to change and, naturally, it is impossible to trace all the concomitants of this change. These pages, therefore, and the statements made here, cannot be, and do not mean to be in any way categorical, but they are rather meant

---

[40] 'Harmony can be the optimistic site of a "unified theory of cosmology," which can account for the many resonances between macrocosm and microcosm, soul and body, immaterial and material worlds, even between God and humanity'; Hicks, *Composing the World*, 4.

[41] See Lougovaya, 'A Perfect Pangram', 184.

as an invitation to a wide and incisively interdisciplinary approach to many major cultural shifts in the Mediterranean international High Middle Ages.

Appendix A: Latin Grammarians

unde incipere debet grammatica? *quidam grammatica a voce coeperunt, alii a litteris, alii a syllabis, alii a casibus, nos a definitione.*
qui tamen coeperunt melius? *utique qui a definitione vel a litteris. nam vox naturalis est et sine grammatica communis cum imperitis. illi autem qui a litteris coeperunt hac videlicet usi sunt ratione, quod grammaticae artis initia a voce oriantur, quae elementis constat.*
elementum quid est? *unius cuiusque rei initium, a quo sumitur incrementum et in quod resolvitur. vox igitur, ut diximus, litteris nititur, litterae syllabis clauduntur, syllabae in dictionem conveniunt, dictio orationem auget, oratio partibus divisa in virtutes vitiaque descendit.*

Where should a grammar start? Some have started their grammar treating of the sound [*vox*], others the letters, others the syllables and others the cases; we will do so treating of the definition. **Who were right then?** Those who started from either the definition or the letters, because the sound is common to all, including the laymen without any need for grammar. And so, those who started from the letters obviously reasoned this way: the beginnings [*initia*] of the art of grammar originate from the sound, which is formed of elements. **And what is an element?** The beginning of any single thing, from which it grows and into which it is resolved. The sound [*vox*] then, as we said, has the letters as support; the letters come together in syllables, the syllables gather in words, the word gives rise to sentences, and the sentence, divided in parts, goes down to the level of virtues or vices.

[Audacis de Scauri et Palladii libris excerpta (2nd century AD, Keil VII)]

The Aristotelian definition of the element as *a quo sumitur incrementum et in quod resolvitur*, is found over and over with little variation in grammarians from the second to the tenth century, including the famous Donatus. Here is Diomedes (c. 375), *De arte grammatica* (Keil I), with some interesting lines about our subject.

II, 'de littera'
L. est pars minima vocis articulatae ab elemento incipiens una figura notabilis [...] l. est vocis eius quae scribi potest forma [...] elementum est minima vis et indivisibilis materia

A letter is the smallest part of an articulated sound, originating from an element and represented by one sign [...] A letter is the form of that sound which can be written [...] An **element** is the smallest force and the indivisible matter of articulated sound,

vocis articulatae vel uniuscuiusque rei initium a quo sumitur incrementum et in quod resolvitur. huius figura littera vocatur; et sunt omnes figurae litterarum numero XXIII. sed harum potestates, quas elementa nominamus, plurimae intelleguntur. litteras etiam ueteres elementa dixerunt, quod orationem velut quaedam semina construant atque dissoluant. etenim differt utrum quis dicat elementum an litteram an per se, quia elementum quidem est vis ipsa et potestas, littera autem figura est potestatis, a vero nomen est et potestatis et figurae. igitur elementum intellegitur, littera scribitur, a *nominatur.*

or else the beginning of every single thing, from which it arises and into which it resolves. The sign of such [element] is called 'letter', and the signs of the letters are in total twenty-three. But their powers [*potestates*], which we call 'elements', are understood in various ways. The people of old called the letters elements, because they bring the sentence about as some sort of seeds, and then dissolve. There is also a difference depending on whether people refer to the element as a letter or in itself, for the element is a force itself and a power, while the letter is the sign of a power. 'A' for instance is the name of both a power and a sign: as element it is understood, as letter it is written, and it is named 'a'.

In an attempt to clarify several such terms found in this grammatical tradition, Martin Irvine sums up:

The common doctrine on *litterae*, therefore, included the following assumptions: a 'letter' is a minimal phonic/graphic unit (*elementum*) of 'scriptible utterance' (*vox litterata*); the concept of 'letter' entails distinctions by 'properties' […] In the grammatical model of language, every level of discourse 'is resolved' (*solvatur*) […] into the parts of the level immediately below it, and all discourse is ultimately resolvable into 'letters', the 'elements' or 'atoms' of writing.[1]

Or in the words of Sergius (c. 450),[2]

omnis oratio solvatur in verba, verba denuo solvantur in syllabas, rursum syllabae solvantur in litteras, littera sola non habet quo solvatur. ideo a philosophis atomos dicitur.

Every sentence is resolved in words; words resolve in syllables; syllables resolve in letters, but the letter alone has nothing to resolve into. This is why it is called *atomos* by the philosophers.

---

[1] Irvine, *Making of Textual Culture*, 100.

[2] *GLK*, 4, 475.

Mundi elementa

In the following lines, Priscian (6th century)[3] gives the Latin equivalent of the cosmological association with the elements.

literas autem etiam elementorum vocabulo nuncupaverunt ad similitudinem mundi elementorum […] litera igitur est nota elementi […] abusive tamen et elementa pro literis et literae pro elementis vocantur.

They called the letters with the name of the elements because of their resemblance to the elements of the cosmos […] The letter is the sign [*nota*] of the element […] It is a misuse when they call the elements letters and the letters elements.

Finally, here is a lively dialogue from the grammar by Iulianus Toletanus (c. 680)[4] introducing some aspects not found previously.

littera quid est? *pars minima vocis articulatae […]* ***quomodo?*** *si adsumas unum nomen, ut puta Honorius, dividas illud per syllabas, ultima syllaba quae remanserit dividas illam per litteras, littera quae remanserit dividi non potest et est pars minima.* ***quomodo vocis articulatae?*** *duae sunt voces, una articulata et altera confusa.* ***quae est confusa?*** *quae scribi non potest, ut puta ovium balatus, equi hinnitus, mugitus bovis, et cetera.* ***item quare dicta confusa?*** *quia ex aere verberato, nullo modo sono exiliente, vis sermonis exprimitur.* ***quae est articulata?*** *quae articulo scribentis conprehendi potest.* ***quare dicta articulata?*** *artus dicuntur membra maiora hominum, et articuli membra minora, ut sunt digiti, et quidquid per istos articulos scribentis conprehendi potest ipsa est vox articulata.* ***item***

What is a letter? The smallest part of an articulate sound. **How is that?** If you take a noun, say 'Honorius', and you divide it in syllables, then you divide the last remaining syllable in letters, then you can no further divide the remaining letter: that is the smallest part. **How so an articulate sound?** There are two types of sound, articulate and confused. **What is the confused one?** The one which cannot be put in writing, like the bleating of sheep, the horses' neigh, the cows' moo etc. **And why are they called confused?** Because the voice (*sermo*) is expelled with the vibration of the air but the sound has no measure. **And what is the articulate one?** The one that can be grasped thanks to the articulation of the writer. **Why is it called articulate?** The major limbs of man are called *artus*, and the minor ones articulations, such as the fingers, and whatever can be grasped thanks to these articulations of a writer is called articulate sound. **And why is it called *littera*?** As if we said *legitera*. **How**

[3] *Institutionum Gramaticarum* (Keil vol. II).

[4] Iulianus Toletanus, *Ars Iuliani Toletani episcopi: una gramática latina de la España visigoda*, ed. M. Maestre Yenes (Toledo: Instituto Provincial de Investigaciones y Estudios Toledanos, 1973), II.1.

quare dicta littera? *quasi legitera.* ***quomodo?*** *eo quod legentibus iter praebeat, vel quod in legendo iteretur.* ***Latinas quis adinuenit litteras?*** *Nicostrata, Evandri mater, in Italia non quia ipsa eas invenisset, sed quia de Graeco in Latinum illas transtulisset.* ***quo nomine post adinventionem litterarum vocata est?*** *Carmentis nympha.* ***quomodo?*** *eo quod carminibus suis futura caneret […]* ***quot sunt genera litterarum?*** *septem.* ***quae?*** *Hebraeae, Atticae, Latinae, Syrae, Chaldaicae, Aegyptiae, et Geticae.* ***quis quales adinvenit litteras?*** *Moyses Hebraeas, Phoenices Atticas, Nicostrata Latinas, Abraham Syras et Chaldaicas, Isis Aegyptias, Gulfila Geticas.*

is that? Because it provides a way (*iter*) for those who read, or because it is repeated (*iteretur*) during the reading. **Who invented the Latin letters?** Nicostrata, Evander's mother, but not because she invented them in Italy, but because she brought them over from Greece. **By what name was she called after this invention?** The nymph Carmentis. **Why so?** Because through her prophetic songs (*carmina*) she would sing of things to come. **How many are the different kinds of letters?** Seven. **Which?** Hebrew, Attic, Latin, Syrian, Chaldean, Egyptian and Getan. **Who invented each of the letters?** Moses the Hebrew, the Phoenicians the Attic ones, Nicostrata the Latin ones, Abraham the Syrian and Chaldean, Isis the Egyptian ones and Gulfila the Getan.

Bibliography

Primary Sources

Alexander of Aphrodisias. *In Aristotelis Metaphysica commentaria*. Edited by M. Hayduck. Commentaria in Aristotelem Graeca 1. Berlin: Reimer, 1891.

ʿAlī ibn Abī Ṭālib. *Min al-shiʿr al-mansūb ilā al-Imām al-Waṣī ʿAlī ibn Abī Ṭālib*. Edited by ʿAbd ʾal-ʿAzīz Sayyid al-Ahl. Beirut: Dār Bayrūt, 1973.

Aquinas, Saint Thomas. *In librum beati Dionysii De divinis nominibus expositio*. Edited by C. Pera O.P. Torino: Marietti, 1950.

Aristophanes. *Ecclesiazusae*. Edited by R. Ussher. Oxford: Clarendon Press, 1973.

Aristotle. *Aristotelis Metaphysica*. Edited by W. Jaeger. Oxford: Oxford University Press, 1969.

Idem. *De generatione et corruptione*. Edited by C. Mugler. Aristoteles et Corpus Aristotelicum. Paris: Les Belles Lettres, 1966.

Idem. *On the Art of Poetry*. Edited by I. Bywater. Oxford University Press, 1909.

Asclepius of Tralles. *Commentary to Nicomachus'* Introduction to Arithmetic. Edited by L. Tarán. Philadelphia: American Philosophical Society, 1969.

Bandt, C. *Traktat 'Vom Mysterium der Buchstaben': kritischer Text mit Einführung, Übersetzung und Anmerkungen*. Texte und Untersuchungen 162. Berlin: Walter de Gruyter, 2007.

Bemidbar Rabbah (The Great Numbers). Merged from Sefaria Community Translation, Rabbi Mike Feuer, Jerusalem Anthology. Sefaria, 15 August 2017. https://www.sefaria.org/Bemidbar_Rabbah.1?lang=bi.

Boethius. *Boethian Number Theory: A Translation of the* De Institutione Arithmetica. Edited by M. Masi et al. Amsterdam: Rodopi, 1983.

al-Būnī, A. *Shams al-maʿārif*. Beirut: Mu'asasa al-nūr al-maṭbūʿāt, 2000.

Calcidius. *On Plato's* Timaeus. Edited by J. Magee. Dumbarton Oaks Medieval Library. Harvard University Press, 2016.

Choeroboscus, G. *De orthographia (epitome)*. In *Anecdota Graeca e codd. manuscriptis bibliothecarum Oxoniensium*, edited by J. Cramer, 167–281. Repr. Amsterdam: Hakkert, 1963. Oxford, 1835.

Idem. *Περὶ τρόπων ποιητικῶν*. Edited by L. Spengel. Vol. 3. Rhetores Graeci. Leipzig: Teubner, 1856. (reprint 1966).

Clavel-Lévêque, M., D. Conso, A. Gonzales, J.-Y. Guillaumin and P. Robin, trans. *Corpus Agrimensorum Romanorum IV. 1. Hygin l'arpenteur. L'établissement des limites*. Luxembourg: Office des publications officielles des communautés européennes, 1996.

Clemens Alexandrinus. *Stromata*. Edited by O. Stählin, L. Früchtel and U. Treu. Die griechischen christlichen Schriftsteller, 52 (15). Berlin: Akademie-Verlag, 1970.

Cornutus, Lucius Annaeus. *Theologiae Graecae Compendium*. Edited by C. Lang. Leipzig: Teubner, 1881.

Corpus Córporum: repositorium operum Latinorum apud universitatem Turicensem. Edited by P. Roelli. Developed by the Institute for Greek and Latin Philology, University of Zurich. Zurich, 13 November 2015. http://www.mlat.uzh.ch/MLS/.

Copenhaver, B. P. *Hermetica: the Greek Corpus Hermeticum and the Latin Asclepius*. Cambridge: Cambridge University Press, 1992.

Das Corpus Hermeticum Deutsch. 2 vols. Clavis Pansophiae, 7, 1-2. Stuttgart: Frommann-Holzboog, 1997.

Corpus Hermeticum. Edited by A. D. Nock and A.-J. Festugière. 4 vols. Paris: Les Belles Lettres, 1972.

Cramer, J., ed. *Catenae Graecorum patrum in Novum Testamentum*. Repr. 1967. Oxford University Press, 1841.

Dante Alighieri. *Divine Comedy*. Petrocchi text edition. Columbia University: Digital Dante. https://digitaldante.columbia.edu/dante/divine-comedy/.

Diels, H., and W. Kranz. *Fragmente der Vorsokratiker*. 6th ed. Repr. 1966. Berlin: Weidmann, 1951.

Dionysius the Areopagite. *Works*. Translated by J. Parker. Christian Classics Ethereal Library reprint 2005. London: James Parker / Co., 1897.

Dionysius Thrax. *Ars grammatica*. Edited by G. Uhlig and A. Merx. Grammatici Graeci 1. Leipzig: B. G. Teubner Verlag, 1883.

Idem. *La grammaire de Denys le Thrace*. 2e éd. rev. et augm. Edited by J. Lallot. Sciences du langage. Paris: CNRS Éditions, 1998.

Idem. *Techne grammatike*. Edited by G. Pecorella. Bologna: Cappelli, 1962.

Eriugena, J. *De divisione naturae libri quinque*. Patrologia Latina 122. Cols. 441--1022. Paris: Migne, 1851.

Idem. *De divisione naturae sive Periphyseon*. Edited by N. Gorlani and É. Jeauneau. Il Pensiero Occidentale. Milano: Bompiani, 2013.

Eudemus of Rhodes. *Fragmenta*. 2nd ed. Edited by F. Wehrli. Die Schule des Aristoteles 8. Basel: Schwabe, 1969.

Eusebius of Caesarea. *Praeparationis evangelicae libri XV*. Edited by F. A. Heinichen. Sergiana Libraria, 1842.

Ficino, M. *The Philebus Commentary*. Edited by M. Allen. Information and Interdisciplinary Subjects. Arizona Center for Medieval / Renaissance Studies, 2000.

al-Ghazālī, A. *Al-Ghazālī on Conduct in Travel: Book XVII of the* Revival of the Religious Sciences. Translated by L. Librande. Ghazālī Series. Cambridge: Islamic Texts Society, 2016.

Idem. *Miʿyār al-ʿilm*. Cairo: Dār al-maʿārif bi-Miṣr, 1961.

Halevi, J. *Kitāb al-radd wa-'l-dalīl fī'l-dīn al-dhalīl (al-Kitāb al-Khazarī)*. Edited by D. Baneth and H. Ben-Shammai. Jerusalem: The Magnes Press, The Hebrew University, The Israel Academy of Sciences / Humanities, 1977.

Idem. *Le* Kuzari*. Apologie de la religion méprisée*. Edited by C. Touati. Collection de la Revue des Études juives. Traduit sur le texte original arabe confronté avec la version hébraïque et accompagné d'une introduction et de notes. Paris-Louvain: Peeters, 2006.

Hamza, F., trans. *Tafsīr al-Jalālayn*. Amman: Royal Aal al-Bayt Institute for Islamic Thought, 2016. http://www.altafsir.com.

al-Harawī, A. *Kitāb gharīb al-ḥadīth*. 6 vols. Cairo: al-Maṭābiʿ al-Amīrīya, 1984.

Hayman, A. P. *Sefer Yeṣira*. Texts and Studies in Ancient Judaism 104. Tübingen: Mohr Siebeck, 2004.

Idem. 'Sefer Yetsira (The Book of Creation)'. *Shadow, The Newsletter of the Traditional Cosmology Society* 3 (1986): 20–38.

Hebbelynck, A. 'Les Mystères des lettres grecques'. Texte copte, traduction, notes. *Le Muséon*, nos. 19/20 (1900/1901): 5–36, 105–136, 269--300 and 5–33, 369–414.

Herodotus. *Historiae*. 3rd ed. Edited by K. Hude. Scriptorum Classicorum Bibliotheca Oxoniensis. Repr. 1990. Oxford: Oxford University Press, 1927.

Hieronymus (Saint Jerome). *De viris illustribus*. Patrologia Latina 96. Paris: Migne, 1851.

Hildegard of Bingen. Symphonia*: A Critical Edition of the* Symphonia Armonie Celestium Revelationum. Edited by B. Newman. Cornell Paperbacks. Cornell University Press, 1998.

Hippolytus. *Refutatio omnium haeresium*. Edited by M. Marcovich. Vol. 25. Patristische Texte und Studien. Berlin: De Gruyter, 1986.

Homer. *Ilias*. 3rd ed. Edited by D. B. Monro and T. W. Allen. Scriptorum Classicorum Bibliotheca Oxoniensis. 2 vols. Oxford: Oxford University Press, 1920.

Iamblichus. *De mysteriis (Jamblique. Les mystères d'Égypte)*. Edited by É. des Places. Paris: Les Belles Lettres, 1966.

Ibn ʿArabī, M. *Le livre du mîm, du wâw et du nûn (*Kitāb al-mīm wa-al-wāw wa-al-nūn*)*. Edited by C. A. Gilis. Héritage Spirituel. Beirut: Dar Albouraq, 2002.

Idem. *Al-Futūḥāt al-makkiyya*. 4 vols. Cairo: Dār al-Kutub al-ʿArabiyya al-Kubrā, 1911.

Ibn Khaldūn, A. *Muqaddima*. Edited by A. A. M. al-Darwīsh. 2 vols. Damascus: Dār Yaʿrib, 2004.

Ibn Khallikān. *Wafayāt al-aʿyān wa-anbā' abnā' al-zamān*. 8 vols. Beirut: Dār Ṣādir, 1972.

Ibn Manẓūr. *Lisān al-ʿarab*. Cairo: Dār al-Maʿārif, 1981.

Idem. *Lisān al-ʿarab*. 15 vols. Qum, Iran, 1405 AH.

Ibn Rushd. *Tafsīr Mā baʿd al-ṭabīʿa*. Edited by M. Bouyges. 3 vols. Bibliotheca Arabica Scholasticorum, Série Arabe, V, 2. Beirut: Imprimérie Catholique, 1938.

Ibn al-Wazīr, M. *Īthār al-ḥaqq ʿalā al-khalq*. 2 vols. Riyadh: Dār al-ṣumayʿī, 2016.

Ikhwān al-Ṣafā'. *On Logic: An Arabic Critical Edition and English Translation of Epistles 10-14*. Edited by C. Baffioni. Epistles of the Brethren of Purity. Oxford University Press in association with The Institute of Ismaili Studies, 2010.

Idem. *al-Risālah al-jāmiʿah*. Edited by M. Ghālib. Beyrut: Dār Ṣadir, 1974/1394.

Idem. *On Arithmetic and Geometry: an Arabic critical Edition and English Translation of Epistles 1-2*. Translated by N. El-Bizri. Epistles of the Brethren of Purity. Oxford: Oxford University Press in association with The Institute of Ismaili Studies, 2012.

Idem. *On Music: an Arabic Critical Edition and English Translation of Epistle 5*. Translated by O. Wright. Epistles of the Brethren of Purity. Oxford: Oxford University Press in association with The Institute of Ismaili Studies, 2010.

Idem. *Rasā'il Ikhwān al-Ṣafā' wa Khullān al-Wafā'*. 4 vols. Beirut: Dār Ṣadir, n.d.

Irenaeus. *Sancti Irenaei episcopi Lugdunensis libri quinque Adversus haereses*. Edited by W. W. Harvey. Cambridge University Press, 1857.

Irenaeus of Lyon. *Irénée de Lyon: Contre les hérésies. Edition critique d'après les versions arménienne et latine*. Edited by A. Rousseau and L. Doutreleau. 9 vols. Editions du Cerf, 1979.

Iulianus Toletanus. *Ars Iuliani Toletani episcopi: una gramática latina de la España visigoda*. Edited by M. Maestre Yenes. Toledo: Instituto Provincial de Investigaciones y Estudios Toledanos, 1973.

Jābir ibn Hayyān. *Muṣannafāt fī ʿilm al-kīmīyā (The Arabic Works of Jābir ibn Ḥayyān)*. Edited by E. J. Holmyard. Paris: Geuthner, 1928.

Jurjānī, A. *Muʿjam al-taʿrifāt*. Edited by M. Ṣ. Minshawī. Dār al-Faḍīlah, 2004.

Kaimakis, D., ed. *Die Kyraniden*. Meisenheim am Glan: Hain, 1976.

Keil, H., ed. *Grammatici latini*. Reprint of the 1855–80 Leipzig edn. 8 vols. Hildesheim: Georg Olms, 1961.

al-Kulaynī, M. *al-Kāfī*. 15 vols. Qum: Markaz Buḥūth Dār al-Ḥadīth, 1430 [2008/2009].

Laertius, D. *Diogenis Laertii vitae philosophorum*. Edited by H. S. Long. Oxford: Clarendon Press, 1964.

Layton, B. *The Gnostic Scriptures*. The Anchor Bible Reference Library. New York: Doubleday, 1987.

Lings, M. *Sufi Poems: A Mediaeval Anthology*. Cambridge: Islamic Texts Society, 2004.

Maimonides, M. *Dalālah al-ḥā'irīn*. Edited by S. Munk. Sifriyah Filosofit. Text in Judaeo-Arabic. Jerusalem: J. Junovitch, 5691 (1929).

Manetho. *Apotelesmatica: accedunt Dorothei et Annubionis fragmenta astrologica*. Edited by A. Koechly. Leipzig: Teubner, 1858.

Mansfeld, J., ed. *Die Vorsokratiker*. 2 vols. Stuttgart: Reclam, 1983/1986.

Mawsūʿa al-ḥadīth al-sharīf (Encyclopaedia of Hadith). 18 vols. Vaduz: Thesaurus Islamicus Foundation, 2000. http://ihsanetwork.org.

Māzandarānī, M. *Sharḥ Uṣūl al-Kāfī*. Edited by A. ʿĀshūr. 12 vols. Beirut: Dār Iḥyā' al-Turāth al-'Arabī, 2000.

Midrash Rabbah. Edited by H. Freedman, M. Simon and J. J. Slotki. 10 vols. London: Soncino Press, 1939.

Midrash Tanhuma, Genesis, S. Buber Recension. Translated by J. Townsend. Hoboken, New Jersey: KTAV Publishing House, 1989.

Midrash Tanhuma-Yelammedenu: An English Translation of Genesis and Exodus from the Printed Version of Tanhuma-Yelammedenu with an Introduction, Notes, and Indexes. Edited by S. A. Berman. Hoboken, New Jersey: KTAV Publishing House, 1996.

Armenteros Cruz, V. 'Midrás Tanḥuma Buber a Génesis: traducción, notas y análisis estructural-hermenéutico'. PhD diss., Universidad de Granada, Departamento de Filología Semítica, 2006.

Mullā Ṣadrā Shīrāzī. *al-Ḥikma al-mutaʿālīya fī al-asfār al-ʿaqlīya al-arbaʿa*. 6 vols. Tehran: Ministry of Culture / Islamic Guidance, 1386 HS.

Al-Nadīm, M. *Al-Fihrist*. Edited by G. Flügel. Leipzig: F. C. W. Vogel, 1872.

The Nag Hammadi Library in English. Edited by J. M. Robinson. New York: HarperCollins, 1990.

Nag Hammadi Deutsch: Studienausgabe. NHC I–XIII, Codex Berolinensis 1 und 4, Codex Tchacos 3 und 4. 3rd ed. de Gruyter Texte. De Gruyter, 2013.

Nicomachus of Gerasa. *Introductio arithmetica*. Edited by R. Hoche. Leipzig: Teubner, 1866.

Idem. *Introduction Arithmétique*. Edited by J. Bertier. Histoire des doctrines de l'Antiquité classique 2. Paris: Vrin, 1978.

Idem. *Introduction to Arithmetic*. Translated by M. D'Ooge. With studies in Greek arithmetic by F. E. Robbins and L. C. Karpinsky. New York and London: Macmillan, 1926.

Idem. *Tābit b. Qurra's arabische Übersetzung der Arithmētikē eisagōgē des Nikomachos von Gerasa: Kitāb al-Madḫal ilā ʿilm al-ʿadad*. Edited by W. Kutsch. Beyrut: Imprimérie Catholique, 1958.

Philo of Alexandria. *De mutatione nominum*. Edited by P. Wendland. Vol. 3. Philonis Alexandrini opera quae supersunt. Repr. 1962. Berlin: Reimer, 1898.

Idem. *On the Creation of the World*. Edited by F. H. Colson and G. H. Whitaker. Vol. 1. Loeb Library. London and Cambridge (Mass.): William Heinemann Ltd., 1962.

Philoponus, J. *Commentario alla Introduzione aritmetica di Nicomaco di Gerasa*. Translated by G. Giardina. Catania: CUECM, 1999.

Plato. *Opera*. Edited by J. Burnet. Scriptorum Classicorum Bibliotheca Oxoniensis. Oxford University Press, 1900.

Plotinus. *Opera*. Edited by P. Henry and H.-R. Schwyzer. 3 vols. Leiden: Brill, 1951-1973.

Plutarch. 'Pourquoi les oracles ont cessé'. In *Oeuvres morales de Plutarque*, translated by D. Ricard, 2:289–355. Paris: Lefévre, 1844.

Idem. *Quaestiones convivales*. In *Plutarchi moralia 4*, edited by C. Hubert. Repr. 1971. Leipzig: Teubner, 1938.

Pontificale Romanum Clementis VIII ac Urbani VIII jussu editum et a Benedicto XIV recognitum et castigatum. Paris: A. Jouby, 1859.

Preisendanz, K., and A. Henrichs, eds. *Papyri Graecae Magicae. Die griechischen Zauberpapyri*. 4 vols. Leipzig/Berlin: Teubner, 1928--1941.

Proclus. *Théologie platonicienne*. Edited by D. Saffrey and L. Westerink. 5 vols. Paris: Les Belles Lettres, 1968.

al-Qur'ān al-karīm. Medina: Majmaʿ al-Malik Fahd li-Ṭibāʿa al-Muṣḥaf al-Sharīf, AH1409.

Nasr, S. H., C. K. Dagli, M. M. Dakake, J. E. Lumbard and M. Rustom, eds. *The Study Quran: A New Translation and Commentary*. New York: Harper Collins, 2015.

Rahlfs, A., ed. *The Septuagint (LXX)*. bibles.org.uk, 2005.

al-Rāzī, F. *Mafātiḥ al-ghayb*. 32 vols. Beirut: Dār Iḥyā' Turāth al-ʿArabī, n.d.

al-Rāzī, A. *Kitāb al-zīna fī al-kalimāt al-islāmiyya al-ʿarabiyya*. Edited by Ḥ. al-Hamadānī. Sanaa: Markaz al-dirāsāt wa-al-buḥūth al-yamanī, 1994.

Reinikka, A. *Ars Pseudo-Scauri: A Critical Edition and Commentary*. Academic dissertation. Helsinki: Unigrafia, 2012.

Saʿadia ben Yosef Gaon. *Commentaire sur le Séfer Yesira ou Livre de la création par le Gaon Saadya de Fayyoum*. Edited by C. Mopsik. Partial reprint of the 1891 edn. Alençon: Editions Bibliophane, 1986.

Santos Otero, A. de. *Los evangelios apócrifos*. 9th ed. Madrid: Biblioteca de Autores Cristianos, 1996.

Ioannis Scythopolitani prologus et scholia in Dionysii Areopagitae librum 'De divinis nominibus' cum additamentis interpretum aliorum. Vol. 4,1. Patristische Texte und Studien 62. Ed. by B.R. Suchla. De Gruyter, 2011.

Scholia in Dionysii Thracis Artem grammaticam. Grammatici Graeci 1.3. Ed. by A. Hilgard. Leipzig: B. G. Teubner Verlag, 1901.

Scholia in Iliadem (scholia recentiora Theodori Meliteniotis, e cod. Genevensi gr. 44). Repr. 1966. Vol. 2. Les scolies genevoises de l'Iliade. Ed. by J. Nicole. Geneva: Georg, 1891.

Scholia Platonica. Ed. by W.C. Greene. Haverford: American Philological Association, 1938.

Sībawayh. *Al-Kitāb*. 4 vols. Cairo: Maktaba al-Khanjī, 1982.

al-Sijzī, A. *Al-radd ʿalā man ankara al-ḥarf wa-al-ṣawt*. Edited by Muḥammad Bā ʿAbd Allāh. Riyadh: Dār al-Rāyah, 1994.

Sike, H., ed. *Evangelium infantiae, vel Liber apocryphus de infantia Servatoris*. apud Franciscum Halmam, 1697.

Synesius. 'ΠΕΡΙ ΕΝΥΠΝΙΩΝ'. In *On Prophecy, Dreams and Human Imagination: Synesius,* De insommniis, by U. Bittrich, B. Bydén, S. Gertz, A. Sheppard and I. Tanaseanu-Döbler, edited by D. A. Russell, 12–59. Mohr Siebeck, 2014.

Talmud Bavli: the Schottenstein edition : the Gemara : the classic Vilna edition, with an annotated, interpretive elucidation, as an aid to Talmud study. Edited by Y. S. Schoor, C. Malinowitz and H. Goldwurm. 72 vols. ArtScroll Series. New York: Mesorah Publishers, 1990-2005.

Talmud Bavli (Soncino Babylonian Talmud). Edited by I. Epstein. 20 July 2016. http://www.halakhah.com/tcontents.html.

Tanakh. Tel Aviv: Sinai Publishing, 1982.

The Infancy Gospels of James and Thomas. Vol. 2. Ed. by R.F. Hock. Santa Barbara, CA: Polebridge Press, 1995.

al-Ṭurayḥī, F. *Majmaʿ al-baḥrayn*. 3 vols. Qum: Mu'assasa al-Biʿthah, 1415 AH.

Samīn, A. *ʿUmdat al-ḥuffāz fī tafsīr ashraf al-alfāẓ*. 4 vols. Beirut: Dār al-kutub al-ʿilmiyya, 1996.

Victorinus Petavionensis. *Commentarii in Apocalypsin*. *Corpus Córporum*, University of Zurich. http://www.mlat.uzh.ch.

al-Zabīdī, M. *Tāj al-ʿarūs min jawāhir al-qāmūs*. Edited by A. Hārūn. 40 vols. Kuwait: Ministry of Guidance / Information, 1994.

Other Sources

Aasgaard, R. *The Childhood of Jesus: Decoding the Apocryphal Infancy Gospel of Thomas*. Cambridge: James Clarke & Co Ltd, 2009.

ʿAbd al-Bāqī, M. F. *al-Muʿjam al-mufahras li-alfāẓ al-qurān al-karīm*. Cairo: Dār al-kutub al-miṣriyya, 1364 AH.

Abdal Hakim Murad. *Selections from the* Fatḥ al-Bārī *by Ibn Ḥajar al-ʿAsqalānī*. Bartlow, Cambridge: Muslim Academic Trust, 2000.

Abercrombie, D. 'What is a "Letter?"' *Lingua* 2 (1949): 54–63.

Addas, C., and M. Chodkiewicz. 'On Two Books Attributed to Ibn ʿArabī: K. al-mabādī wa l-ghāyāt li maʿānī l-ḥurūf and K. māhiyyat al-qalb'. *Journal of the Muhyiddin Ibn ʿArabi Society* 62 (2017).

Ademollo, F. *The Cratylus of Plato: A Commentary*. Cambridge University Press, 2011.

Affifi, A. E. 'The Influence of Hermetic Literature on Moslem Thought'. *Bulletin of the School of Oriental and African Studies* 13, no. 4 (1951): 840–855.

Ahmad, S. N. *Magic and the Occult in Islam: Ahmad al-Buni and his Shams Al-Maʿarif*. lecture given at the Warburg Institute, May 2013. http://www.medievalists.net/2013/07/magic-and-the-occult-in-islam-ahmad-al-buni-622h1225ce-and-his-shams-al-maarif/.

Akkach, S. *Cosmology and Architecture in Premodern Islam: An Architectural Reading of Mystical Ideas*. State University of New York Press, 2012.

Idem. 'The World of Imagination in Ibn ʿArabi's Ontology'. *British Journal of Middle Eastern Studies* 24 (May 1997). DOI: 10.1080/13530199708705640.

Albert Reyna, R. F. 'El concepto de lenguaje en las Epístolas de los Hermanos de la Pureza'. *Anaquel de estudios árabes* 20 (2009): 5–17. http://hdl.handle.net/10486/676605.

Alhazov, A., R. Freund and M. Oswald. 'Tissue P Systems with Antiport Rules and Small Numbers of Symbols and Cells'. In *Developments in Language Theory, 9th International Conference*, 100–111. Springer, 2005.

D'Alverny, M.-T. Review of *La Révélation d'Hermès Trismégiste. I: L'astrologie et les sciences occultes* by A.-J. Festugière. *Bibliothèque de l'École des chartes* 105, no. 1 (1944): 267–270.

Ambrosetti, N. *L'eredità arabo-islamica nelle scienze e nelle arti del calcolo dell'europa medievale*. Milano: LED Edizioni Universitarie di Lettere Economia Diritto, 2008.

Amir-Moezzi, M. A. *The Divine Guide in Early Shi'ism: The Sources of Esotericism in Islam*. Translated by D. Streight. Albany, NY: SUNY Press, 1994.

Andrieu, M. *Les Ordines romani du haut moyen âge*. 5 vols. Études et documents 28. Spicilegium sacrum lovaniense, 1956.

Annas, J. *Aristotle's Metaphysics: Books M and N*. Clarendon Aristotle Series. Oxford: Clarendon Press, 1976.

Asatryan, M. *Controversies in Formative Shiʿi Islam: The Ghulat Muslims and Their Beliefs*. Shiʿi Heritage Studies 4. London: I.B. Tauris, 2017.

Augustine of Hippo, Saint. *De diversis quaestionibus octoginta tribus*.

Baeck, L. 'Die zehn Sephirot im Sepher Jezira'. *Monatsschrift für Geschichte und Wissenschaft des Judentums* 78 (1934): 448–455. http://www.wbenjamin.org/baeck.html.

Idem. 'Zum Sepher Jezira'. *Monatsschrift für Geschichte und Wissenschaft des Judentums* 70 (1926): 371–376. http://www.wbenjamin.org/baeck.html.

Baffioni, C. 'Citazioni di autori antichi nelle *Rasa'il Ikhwan al-Safa'*: il caso di Nicomaco di Gerasa'. In *The Ancient Tradition in Christian and Islamic Hellenism, Studies on the Transmission of Greek Philosophy and Sciences*, edited by G. Endress and R. Kruk, 3–27. Leiden: Research School CNWS, 1997.

Bakker, M. 'A Papyrus with Mathematical Problems'. *The Bulletin of the American Society of Papyrologists* 44 (2007): 7–21.

Balázs, J. 'The forerunners of structural prosodic analysis and phonemics'. *Acta Linguistica Hungarica* (Budapest) 15, nos. 1–2 (1965): 229–86.

Barbera, A. *The Euclidean Division of the Canon: Greek and Latin Sources*. Vol. 8. Lincoln and London: University of Nebraska Press, 1991.

Barbet-Massin, D. ‘The Rite of Church Dedication in Early Medieval Ireland and the Dedication Scheme in the Angers Manuscript 477’. *Peritia* 27 (2016): 11–30.

Bargeliotes, L. C. ‘Aristotle’s Stoichiology: its rejection and revivals’. *Phronimon* 1, no. 1 (1999): 16–23.

Bashir, S. ‘The Alphabetical Body: Ḥorūfī Reflections on Language, Script and the Human Form’. In *Religious Texts in Iranian Languages. Symposium held in Copenhagen May 2002*, edited by M. Timus, F. Vahman and C. V. Pedersen, 279–292. Royal Danish Academy of Sciences and Letters, 2007. http : / / journals . openedition . org / abstractairanica/37538.

Beierwaltes, W. ‘Augustins Interpretation von Sapientia 11,21’. *Revue d’Etudes Augustiniennes et Patristiques* 15, nos. 1-2 (1969): 51–61. DOI: 10.1484/J.REA.5.104163.

Bekkum, W. J. van, J. Houben, I. Sluiter and K. Versteegh. *The Emergence of Semantics in Four Linguistic Traditions: Hebrew, Sanskrit, Greek, Arabic*. Amsterdam Studies in the Theory and History of Linguistic Science 82. Amsterdam/Philadelphia: John Benjamins Publishing, 1997.

Bell, J. L. *The Continuous and the Infinitesimal in Mathematics and Philosophy*. Monza: Polimetrica, 2005.

Berggren, J. L. *Episodes in the Mathematics of Medieval Islam*. 2nd ed. New York: Springer, 2016.

Bergman, J. ‘*Per omnia vectus elementa remeavi*. Réflexions sur l’arrière-plan égyptien du voyage de salut d’un myste isiaque’. In *La soteriologia dei culti orientali nell’Impero Romano*, edited by U. Bianchi and M. Vermaseren, 671–708. Brill, 1982.

Bernabé, A. ‘Una etimología platónica: σῶμα-σῆμα’. *Philologus - Zeitschrift für antike Literatur und ihre Rezeption* 139, no. 2 (1995): 204–237.

Berschin, W. *Griechisch-lateinisches Mittelalter: Von Hieronymus zu Nikolaus von Kues*. Bern/München: Francke Verlag, 1980.

Bertolacci, A. ‘On the Arabic Translations of Aristotle’s *Metaphysics*’. *Arabic Sciences and Philosophy* 15, no. 2 (2005): 241–275.

Betz, H. D., ed. *The Greek Magical Papyri in Translation, including the Demotic Spells*. University of Chicago Press, 1986.

Bitton-Ashkelony, B. ‘Counseling Through Enigmas’. Chap. 5 in *The Monastic School of Gaza*, by B. Bitton-Ashkelony and A. Kofsky, 107–126. Supplements to Vigiliae Christianae 78. Brill, 2006.

El-Bizri, N. ‘God: Essence and Attributes’. In *The Cambridge Companion to Classical Islamic Theology*, 121–40. Cambridge University Press, 2008.

Björklund, H. ‘Invocations and Offerings as Structural Elements in the Love Spells in *Papyri Graecae Magicae*’. *Journal for Late Antique Religion and Culture*, no. 9 (2015): 29–47.

Bladel, K. van. ‘Gnosticism’. *Encyclopaedia of Islam, THREE*:82–86. DOI: http://dx.doi.org/10.1163/1573-3912_ei3_COM_27490.

Blažek, V. *Numerals: Comparative Etymological Analyses of Numeral Systems and their Applications*. Brno: Masaryk University, 1999.

Blössner, N. ‘Stoicheion’. *Historisches Wörterbuch der Philosophie* (Basel), 1998. DOI: 10.24894/HWPh.4074.

Blumenberg, H. *Die Lesbarkeit der Welt*. Frankfurt am Main: Suhrkamp, 1981.

Bohak, G. 'The Impact of Jewish Monotheism on the Greco-Roman World'. *Jewish Studies Quarterly* 7, no. 1 (2000): 1–21.

Bohas, G. 'Le traitement de la conjugaison du syriaque chez Bar Zo'bî : une langue sémitique dans le miroir de la grammaire grecque'. *Parole de l'Orient* 40 (2015): 1–19.

Bonmariage, C., and S. Moureau. *Le Cercle des lettres de l'alphabet (*Dā'irat al-aḥruf al-abjadiyya*)*. Leiden: Brill, 2016.

Bortone, P. *Greek Prepositions: From Antiquity to the Present*. Oxford University Press, 2010.

Bos, G., and Y. T. Langermann. 'An Epitome of Galen's on The Elements Ascribed to Ḥunayn Ibn Isḥāq'. *Arabic Sciences and Philosophy* 25 (2015): 33–78. DOI: 10.1017/S0957423914000095.

Bowden, H. S. *Dante*. London: Catholic Truth Society, 1901.

Böwering, G. 'Sulamī's Treatise on the Science of the Letters'. In *In the Shadow of Arabic: The Centrality of Language to Arabic Culture*, edited by B. Orfali, 339–397. Leiden: Brill, 2011.

Bradatan, C. 'Berkeley and Liber Mundi'. *Minerva* 3 (1999).

Brentjes, S. 'An Exciting New Arabic Version of Euclid's Elements: MS Mumbai, MULLĀ FĪRŪZ RI 6'. *Revue d'histoire des mathématiques* 12, no. 2 (2006): 169–197.

Brisson, L. *Le même et l'autre dans la structure ontologique du Timée de Platon: un commentaire systématique du Timée de Platon*. 3rd ed. International Plato studies 2. Sankt Augustin: Academia Verlag, 1998.

Idem. 'Platon, Pythagore et les Pythagoriciens'. *Eikasia. Revista de Filosofía*, no. 12 (2007): 39–66.

Broek, R. v. d. *The Myth of the Phoenix, According to Classical and Early Christian Traditions*. Leiden: E. J. Brill, 1972.

Brown, J. *The Canonization of Al-Bukhārī and Muslim: The Formation and Function of the Sunnī Ḥadīth Canon*. Islam History and Civilization, Studies and Texts 69. Leiden, Boston: Brill, 2007.

Bücheler, F. 'Νεόψηφον'. *Rheinisches Museum für Philologie* 61 (1906): 307–308.

Buchwald, G. *Der Logosbegriff des Johannes Scotus Erigena*. Leipzig: J. Drescher, 1884.

Buck, C. D. *A Dictionary of Selected Synonyms in the Principal Indo-European Languages*. University of Chicago Press, 2008.

Bueno Donadon, D. '*Adversus haereses* de Ireneu de Lyon: tradução e comentários'. PhD diss., Universidade Estadual de Campinas, Instituto de Estudos da Linguagem, 2011.

Burch, G. B. *Early Medieval Philosophy*. New York: King's Crown Press, 1951.

Burkert, W. *Lore and Science in Ancient Pythagoreanism*. Cambridge, Mass.: Harvard University Press, 1972.

Idem. 'ΣTOIXEION: Eine semasiologische Studie'. *Philologus: Zeitschrift für antike Literatur und ihre Rezeption* 103 (1959): 167–197.

Burnet, J. *Early Greek Philosophy*. 3rd ed. London: A & C Black, 1920.

Burnett, C. *Numerals and Arithmetic in the Middle Ages*. Variorum Collected Studies 967. Farnham, UK: Ashgate, 2010.

Idem. 'The Legend of the Three Hermes and Abū Maʿshar's *Kitāb al-Ulūf* in the Latin Middle Ages'. *Journal of the Warburg and Courtauld Institutes* 39 (1976): 231–234.

Burnett, C. 'The Semantics of Indian Numerals in Arabic, Greek and Latin'. *Journal of Indian Philosophy* 34, no. 1 (April 2006): 15–30.

Idem. 'The Transmission of Arabic Astronomy via Antioch and Pisa in the Second Quarter of the Twelfth Century'. In *The Enterprise of Science in Islam: New Perspectives*, edited by J. P. Hogendijk and A. I. Sabra, 23–51. MIT Press, 2003.

Busi, G. *Qabbalah visiva*. Torino: Einaudi, 2005.

Butz, P. A. *The Art of the Hekatompedon Inscription and the Birth of the Stoikhedon Style*. Monumenta Graeca et Romana 16. Leiden: Brill, 2010.

Buzássyová, Ľ. 'The 'Phonetic Complex' in Renaissance Latin Grammar Petrus Ramus's Dichotomies and Their Reflections in Two Vernacular Grammatical Texts'. *Graeco-Latina Brunensia* (Bratislava) 21, no. 2 (2016): 81–98. DOI: 10.5817/GLB2016-2-8.

Caballero, R. 'El Comentario anónimo al *Tetrabiblos* de Tolomeo: Edición crítica y traducción castellana de los escolios metodológicos del libro I (in Ptol. Tetr. 1.1.1–1.3.1)'. *MHNH* (Universidad de Málaga), no. 13 (2013): 221–258.

Caiazzo, I. 'La forme et les qualités des éléments: lectures médiévales du Timée'. In *Il Timeo. Esegesi greche, arabe, latine*, edited by F. Celia and A. Ulacco, 307–344. Pisa: Plus, 2012.

Calcidius. *Plato Latinus, vol. 4:* Timaeus, A Calcidiu Translatus Commentarioque Instructus. Edited by R. Klibansky and J. H. Waszink. London and Leiden: Warburg Institute / E. J. Brill, 1962.

Campbell, J. B. *The Writings of the Roman Land Surveyors*. London: Society for the Promotion of Roman Studies, 2000.

Brill's New Pauly: Encyclopaedia of the Ancient World. Edited by H. Cancik, H. Schneider, C. F. Salazar and D. E. Orton. 16 vols. Leiden: Brill, 2010.

Canteins, J. *Phonèmes et archétypes: contextes autour d'une structure trinitaire; AIU*. Paris: G.-P. Maisonneuve et Larose, 1972.

Capurro, R. *Apud Arabes: Notes on Greek, Latin, Arabic, Persian, and Hebrew Roots of the Concept of Information*, 2014. Accessed 21 April 2018. http://www.capurro.de/iran.html.

Casewit, Y. A. 'The Forgotten Mystic: Ibn Barrajān (d. 536/1141) and the Andalusian *Muʿtabirūn*'. PhD diss., Yale University, 2014.

Cassin, B., E. Apter, J. Lezra and M. Wood. *Dictionary of Untranslatables: A Philosophical Lexicon*. Translation/Transnation. Princeton University Press, 2014.

Cassirer, E. *The Individual and the Cosmos in Renaissance Philosophy*. Translated by M. Domandi. University of Chicago Press, 2010.

Chakrabarti, A. *The Bloomsbury Research Handbook of Indian Aesthetics and the Philosophy of Art*. Bloomsbury Research Handbooks in Asian Philosophy. Bloomsbury Publishing, 2016.

Chantraine, P. *Dictionnaire étymologique de la langue grecque: histoire des mots*. Paris: Klincksieck, 2009.

Charles, R. H. *A Critical and Exegetical Commentary on the Revelation of St. John*. Edinburgh: T. & T. Clark, 1920.

Charlton, W. *Aristotle's Physics: Books I and II*. Oxford University Press, 1983.

Chittick, W. C. 'Ibn Arabi'. In *The Stanford Encyclopedia of Philosophy*, Summer 2018, edited by E. N. Zalta. Metaphysics Research Lab, Stanford University, 2018. https://plato.stanford.edu/archives/sum2018/entries/ibn-arabi/.

Idem. 'Ibn ʿArabī and His School'. Chap. 3 in *Islamic Spirituality: Manifestations*, edited by S. H. Nasr, 49–79. New York: The Crossroad Publishing Company, 1981.

Idem. *The Sufi Path of Knowledge: Ibn al-Arabi's Metaphysics of Imagination*. Albany, NY: Suny Press, 2010.

Idem. 'The Wisdom of the Animals'. *Journal of the Muhyiddin Ibn 'Arabi Society* 46 (2009): 27–37.

Chrisomalis, S. *Numerical Notation: A Comparative History*. Cambridge University Press, 2010.

Idem. 'Re-evaluating Merit: Multiple Overlapping Factors Explain the Evolution of Numerical Notations'. *Writing Systems Research* 9, no. 1 (2017): 1–13. DOI: 10.1080/17586801.2016.1227688.

Clement, R. W. 'Medieval and Renaissance book Production'. *Library Faculty & Staff Publications* (Utah State University), no. 10 (1997). https://digitalcommons.usu.edu/lib_pubs/10.

Coogan, M. D. 'Alphabets and Elements'. *Bulletin of the American Schools of Oriental Research*, no. 216 (1974): 61–63.

Coomaraswamy, A. *Selected Papers 1: Traditional Art and Symbolism*. Edited by R. Lipsey. Bollingen Series 89. Princeton: Princeton University Press, 1977.

Corbin, H. *Histoire de la philosophie islamique*. 2 vols. Paris: Gallimard, 1986.

Idem. *The Concept of Comparative Philosophy*. Ipswich: Golgonooza Press, 1981.

Cornelli, G. *In Search of Pythagoreanism: Pythagoreanism as an Historiographical Category*. Studia Praesocratica 4. Berlin/Boston: Walter de Gruyter, 2013.

Corriente, F. 'From Old Arabic to Classical Arabic Through the Pre-Islamic Koine: Some Notes on the Native Grammarians' Sources, Attitudes and Goals'. *Journal of Semitic Studies* 21, nos. 1-2 (1976): 62–98.

Coullaut Cordero, J. 'El *Kitāb Šams al-Maʿārif al-Kubrà* (*al-ŷuz' al-awwal*) de Aḥmad b. ʿAlī al-Būnī: Sufismo y ciencias ocultas'. PhD diss., Facultad de filología, Universidad de Salamanca, 2009.

Coulon, J.-C. 'La magie islamique et le « corpus bunianum » au Moyen Âge'. PhD diss., Sorbonne, Ecole doctorale IV: Civilisations, cultures, littératures et sociétés, 2013.

Crippa, S. 'Les marges du langage dans les contextes sacrés: φθόγγος, φθέγγομαι'. Chap. 18 in *Manières de penser dans l'Antiquité méditerranéenne et orientale: Mélanges offerts à Francis Schmidt*, edited by C. Batsch and M. Vârtejanu-Joubert, 269–280. Supplements to the Journal for the Study of Judaism 134. Brill, 2009.

Crowley, T. J. 'On the Use of *Stoicheion* in the Sense of "Element"'. *Oxford Studies in Ancient Philosophy*, no. XXIX (Winter 2005): 367–394.

Curtius, E. R. *European Literature and the Latin Middle Ages*. Bollingen Series 36. Princeton University Press, 2013.

D'Ancona, C. 'From Late Antiquity to the Arab Middle Ages: the commentaries and the »harmony between the philosophies of Plato and Aristotle«'. In *Albertus Magnus und die Anfänge der Aristoteles-Rezeption im lateinischen Mittelalter*, edited by L. Honnefelder, 45–70. Subsidia Albertina 1. Münster: Aschendorff, 2005.

Dalzell, A. 'Language and atomic theory in Lucretius'. *Hermathena*, no. 143 (1987): 19–28. DOI: 10.2307/23040871.

Dan, J. *The 'Unique Cherub' Circle: A School of Mystics and Esoterics in Medieval Germany*. Vol. 15. Mohr Siebeck, 1999.

Idem. '**לתפיסת המספר בספר יצירה** (The Concept of Number in the Book of Creation)'. *Daat: A Journal of Jewish Philosophy & Kabbalah*, no. 34 (Winter AM 5755 / 1995 CE): 5–15.

De Callataÿ, G. 'Brethren of Purity (Ikhwān al-Ṣafā')'. *Encyclopaedia of Islam, THREE*, 2013. DOI: http://dx.doi.org/10.1163/1573-3912_ei3_COM_25372.

Idem. 'From Ibn Masarra to Ibn 'Arabī: references, shibboleths and other subtle allusions to the *Rasā'il Ikhwān al-Ṣafā'* in the literature of al-Andalus'. *Studi Magrebini* (Napoli), 2014--2015.

Idem. *Ikhwan al-Safa': a Brotherhood of Idealists on the Fringe of Orthodox Islam*. Makers of the Muslim World. Oneworld Publications, 2005.

Idem. 'Philosophy and Bāṭinism in al-Andalus: Ibn Masarra's *Risālat al-Iʿtibār* and the *Rasā'il Ikhwān al-ṣafā*'. *Jerusalem Studies in Arabic and Islam* 41 (2014): 261–312.

Idem. 'The Classification of the Sciences according to the Rasa'il Ikhwan al-Safa''. (lecture). (The Institute of Ismaili Studies, London), 2003.

De Cesaris, G. Review of *A History of Pythagoreanism*, by C. Huffman. *International Plato Journal*, December 2014, 101–103.

De Groot, J. *Aristotle's Empiricism: Experience and Mechanics in the Fourth Century BC*. Las Vegas, Zurich, Athens: Parmenides Publishing, 2014.

De Rossi, G. 'Degli alfabeti, che il vescovo scrive sulla croce decussata nel consecrare le chiese'. *Bullettino di Archeologia Cristiana* (Roma), 3rd ser., 6, no. 4 (1881): 140–146.

Idem. 'Dell'alfabeto nei monumenti cristiani'. *Bullettino di Archeologia Cristiana* (Roma), 3rd ser., 6, no. 4 (1881): 129–139.

Dickey, E. *Ancient Greek Scholarship: A Guide to Finding, Reading, and Understanding Scholia, Commentaries, Lexica, and Grammatical Treatises, from Their Beginnings to the Byzantine Period*. Classical Resources 7. New York: Oxford University Press, 2007.

Dieleman, J. *Priests, Tongues, and Rites: The London-Leiden Magical Manuscripts and Translation in Egyptian Ritual (100-300 CE)*. Religions in the Graeco-Roman World 153. Leiden, Boston: Brill, 2005.

Diels, H. *Elementum: eine Vorarbeit zum griechischen und lateinischen Thesaurus*. Leipzig: B. G. Teubner Verlag, 1899.

Dieterici, F. *Die Philosophie der Araber im IX. und X. Jahrhundert n. Chr. aus der Theologie des Aristoteles, den Abhandlungen Alfārābīs und den Schriften der Lautern Brüder*. 2 vols. Leipzig: J. C. Hinrichs'sche Buchhandlung, 1876.

Dilke, O. A. W. 'The Roman Surveyors'. *Greece & Rome* 9, no. 2 (October 1962): 170–180.

Idem. *Greek and Roman Maps: Aspects of Greek and Roman Life*. London: Thames / Hudson, 1985.

Dillon, J. '*Pleroma* and Noetic Cosmos: A Comparative Study'. In *Neoplatonism and Gnosticism*, edited by R. T. Wallis and J. Bregman, 99–110. Studies in Neoplatonism: Ancient and Modern 6. SUNY Press, 1992.

Djebbar, A. 'Las prácticas combinatorias en el Magreb en la época de Ramon Llull'. *Quaderns de la Mediterrània*, no. 9 (2008): 319–323.

Dornseiff, F. *Das Alphabet in Mystik und Magie*. Stoicheia, Studien zur Geschichte des antiken Weltbildes und der griechischen Wissenschaft 7. Leipzig: B.G. Teubner, 1922.

Dörrie, H. ‘Präpositionen und Metaphysik: Wechselwirkung zweier Prinzipienreihen’. *Museum Helveticum* 26, no. 4 (1969): 217–228.

Druart, T.-A. ‘La Notion de « stoicheïon » dans le « Théétète » de Platon’. *Revue Philosophique de Louvain* 66, no. 91 (1968): 420–434.

Idem. ‘La Stoicheïologie de Platon’. *Revue Philosophique de Louvain* 73, no. 18 (1975): 243–262.

Glossarium mediæ et infimæ graecitatis. Edited by C. D. F. Du Cange. Lyon: Jean Anisson, 1688. (reprint Collège de France, 1943).

Glossarium mediæ et infimæ latinitatis. Edited by C. D. F. Du Cange. Niort: L. Fabre, 1883.

Ebeling, F. *The Secret History of Hermes Trismegistus: Hermeticism from Ancient to Modern Times*. Ithaca, NY: Cornell University Press, 2007.

Ebstein, M. *Mysticism and Philosophy in al-Andalus*. Leiden: Brill, 2014.

Ebstein, M., and S. Sviri. ‘The So-called *Risālat al-ḥurūf* (*Epistle on Letters*) Ascribed to Sahl al-Tustarī and Letter Mysticism in al-Andalus’. *Journal Asiatique* 1, no. 299 (2011): 213–270.

Eco, U., R. Lambertini, C. Marmo and A. Tabarroni. ‘On Animal Language in the Medieval Classification of Signs’. In *On the Medieval Theory of Signs*. Foundations of Semiotics 21. Amsterdam: John Benjamins B.V., 1989.

Ehrman, B., and Z. Plese, eds. *The Apocryphal Gospels: Texts and Translations*. Oxford University Press, 2011.

El Daly, O. *Egyptology: the Missing Millennium. Ancient Egypt in Medieval Arabic Writings*. London: UCL Press, 2005.

Encyclopedia of Medieval Philosophy: Philosophy Between 500 and 1500. Edited by H. Lagerlund. Springer, 2010.

Endress, G., and D. Gutas. *A Greek and Arabic lexicon: Materials for a Dictionary of the Mediaeval Translations from Greek into Arabic*. Handbuch der Orientalistik. Erste Abteilung, der Nahe und Mittlere Osten. Leiden: Brill, 2013.

Enghag, P. *Encyclopedia of the Elements: technical data, history, processing, applications*. John Wiley & Sons, 2008.

Erder, Y. ‘The Origin of the Name Idrīs in the Qur’ān: A Study of the Influence of Qumran Literature on Early Islam’. *Journal of Near Eastern Studies* 49, no. 4 (1990): 339–350.

Ernst, C. W. *Refractions of Islam in India: Situating Sufism and Yoga*. SAGE Publications India, 2016.

Everett, C. *Numbers and the Making of Us: Counting and the Course of Human Cultures*. Cambridge (MA): Harvard University Press, 2017.

Filler, E. ‘תאור הבריאה על-ידי פילון לאור תורת המספרים הניאופיתגוראית (Description of the Creation by Philo in the Light of The Neopythagorean Theory of Numbers)’. *Daat: A Journal of Jewish Philosophy & Kabbalah*, no. 62 (2008): 5–25.

al-Fīrūzābādī, M. *al-Qāmūs al-muḥīṭ*. Beirut: Mu’assasa al-risāla, 1998.

Fischer, W., and H. Gätje. *Grundriss der arabischen Philologie*. 3 vols. Reichert Verlag, 1987.

Flügel, G. ‘Ueber Inhalt und Verfasser der arabischen Encyclopädie رسائل اخوان الصفاء وخلان الوفاء : d. i. die Abhandlung der aufrichtigen Brüder und treuen Freunde. Nebst Andeutungen über die Einrichtungen des Bundes der Verbrüderten’. *Zeitschrift der Deutschen Morgenländischen Gesellschaft* 13 (1859): 1–43.

Förster, N. *Marcus Magus: Kult, Lehre und Gemeindeleben einer valentinianischen Gnostikergruppe*. Wissenschaftliche Untersuchungen zum Neuen Testament 114. Tübingen: Mohr Siebeck, 1999.

Fowden, G. *The Egyptian Hermes: a Historical Approach to the Late Pagan Mind*. Princeton University Press, 1993.

Fowler, D. H. 'Ratio in Early Greek Mathematics'. *Bulletin of the American Mathematical Society* 1, no. 6 (1979): 807–846.

Fraker, C. F. 'Hermes Trismegistus in the *General Estoria II*'. In *Medieval Iberia: Changing Societies and Cultures in Contact and Transition*, 87–98. Tamesis Books, 2007.

Freitas, L. de. 'The Mathematical Continuum: A Haunting Problematic'. *The Mathematics Enthusiast* 15, no. 1 (2018): 148–158.

Freudenthal, G., and M. Zonta. 'Remnants of Ḥabīb Ibn Bahrīz's Arabic Translation of Nicomachus of Gerasa's *Introduction to Arithmetic*'. In *Adaptations and Innovations: Studies on the Interaction between Jewish and Islamic Thought and Literature from the Early Middle Ages to the Late Twentieth Century, dedicated to Prof. Joel L. Kraemer*, 67–82. Louvain: Éditions Peeters, 2007.

Freytag, G. *Lexicon Arabico-Latinum*. 4 vols. Berlin: C.A. Schwetschke & Son, 1837.

Frilingos, C. A. 'Parents Just Don't Understand: Ambiguity in Stories about the Childhood of Jesus'. *Harvard Theological Review* 109 (2016): 33–55. DOI: 10.1017/S0017816015000474.

Gadamer, H.-G. *Die Begriffsgeschichte und die Sprache der Philosophie*. Arbeitsgemeinschaft für Forschung des Landes Nordrhein-Westfalen: Geisteswissenschaften 170. Wiesbaden: Springer Fachmedien, 1971.

Gara, N. S. 'Die Rezeption der Philosophie des Aristoteles im Islam als Beispiel die Rezeption der Seelenlehre des Aristoteles bei Ibn Sīnās Buch (ʿIlm al-nafs: Die Wissenschaft der Seele'. PhD diss., Seminar für Sprachen und Kulturen des Vorderen Orients, der Ruprecht–Karls–Universität Heidelberg, 2003.

García Landa, J. 'Narrating Narrating: Twisting the Twice-Told Tale'. In *Theorizing Narrativity*, edited by J. Pier and J. García Landa, 419–452. Berlin/Boston: Walter de Gruyter, 2008.

García Molinos, A. 'Tipología de la adivinación en los papiros griegos mágicos'. PhD diss., Facultad de Filosofía y Letras, Universidad de Valladolid, 2014.

Gardiner, N. D. 'Esotericism in a Manuscript Culture: Aḥmad al-Būnī and His Readers through the Mamlūk Period'. PhD diss., University of Michigan, 2014.

Idem. 'Forbidden Knowledge? Notes on the Production, Transmission, and Reception of the Major Works of Aḥmad al-Būnī'. *Journal of Arabic and Islamic Studies* 12 (2012). DOI: https://doi.org/10.5617/jais.4618.

Garrido Clemente, P. '¿Era Ibn Masarra de Córdoba un filósofo?' *Anaquel de Estudios Árabes* 21 (2010): 123–140.

Idem. 'Edición crítica del *K. Jawāṣṣ al-ḥurūf* de Ibn Masarra'. *al-Andalus Magreb* 14 (2007): 51–89.

Idem. 'Ibn Masarra a través de las fuentes: obras halladas y escritos desconocidos'. *Estudios Humanísticos. Filología*, no. 31 (2009): 87–106.

Gelderen, M. van. 'Between Cambridge and Heidelberg. Concepts, Languages and Images in Intellectual History'. In *History of Concepts: Comparative Perspectives*, 227–238. Amsterdam University Press, 1998.

Gill, M. L. 'The Divine Method in Plato's Philebus'. In *Plato's Philebus: Selected Papers from the Eighth Symposium Platonicum*, edited by J. Dillon and L. Brisson, 36–46. Sankt Augustin: Academia Verlag, 2010.

Goethals, J., V. McGuire and G. Zhang. *Power and Image in Early Modern Europe*. EBSCO ebook academic collection. Newcastle: Cambridge Scholars, 2009.

Goethe, J. von. *West-östlicher Divan*. Stuttgart: Cottaischen Buchhandlung, 1819.

González Rabassó, G. '*Subtilitates naturae:* Continuïtats i ruptures a la cosmologia d'Hildegarda de Bingen'. PhD diss., Facultat de Filosofia, Universitat de Barcelona, 2015.

Goulbourne, R. 'Conversations with the Dead in Early Modern France'. *The Modern Language Review* 108, no. 1 (January 2013): 90–108. DOI: 10.5699/modelangrevi.108.1.0090.

Gow, J. *A Short History of Greek Mathematics*. Cambridge: Cambridge University Press, 1884.

Graham, D. W. 'Philolaus'. Chap. 2 in *A History of Pythagoreanism*, edited by C. Huffman, 46–68. Cambridge: Cambridge University Press, 2014.

Idem. *The Texts of Early Greek Philosophy: the Complete Fragments and Selected Testimonies of the Major Presocratics*. 2 vols. Cambridge University Press, 2010.

Gril, D. 'The Science of Letters'. In *Ibn al-Arabi, The Meccan Revelations, volume II*, edited by M. Chodkiewicz, 105–219. New York: Pir Press, 2004.

Gruenwald, I. 'A Preliminary Critical Edition of Sefer Yezira'. *Israel Oriental Studies* 1 (1971): 132–177.

Gurgel Pereira, R. 'The Hermetic Λόγος: Reading the *Corpus Hermeticum* as a Reflection of Graeco-Egyptian Mentality'. PhD diss., Philosophisch-Historischen Fakultät der Universität Basel, 2010.

Gutas, D. *Avicenna and the Aristotelian Tradition: Introduction to Reading Avicenna's Philosophical Works. Second, Revised and Enlarged Edition, including an Inventory of Avicenna's Authentic Works*. Islamic Philosophy, Theology and Science. Texts and Studies 89. Leiden, Boston: Brill, 2014.

Gvozdanović, J. 'Remarks on Numeral Systems'. In *Indo-European Numerals*, 1–10. Berlin and New York: Mouton de Gruyter, 1992.

Habil, A. 'Traditional Esoteric Commentaries on the Qur'an'. In *Islamic Spirituality: Foundations*, edited by S. H. Nasr, 24–47. London & New York: Routledge, 1989.

Hadot, P. *Philosophy as a Way of Life: Spiritual Exercises from Socrates to Foucault*. Translated by M. Chase. Oxford: Blackwell, 1995.

Hager, M. E. 'Philolaus and the Even-Odd'. *The Classical Review* (Cambridge, UK) 12, no. 1 (March 1962): 1–2.

Hallum, B. 'New Light on Early Arabic *Awfāq* Literature'. (forthcoming). (London), 2018.

Hallyn, F. 'Le Modèle alphabétique de l'atome ancien'. *Alliage* 57-58 (July 2006). http://revel.unice.fr/alliage/index.html?id=3545.

Halper, Y. 'Averroes on Metaphysical Terminology: An Analysis and Critical Edition of the Long Commentary on Aristotle's Metaphysics Δ'. PhD diss., Dept of Philosophy, Bar-Ilan University, 2010.

Hanegraaff, W. J. *Dictionary of Gnosis & Western Esotericism*. Leiden: Brill, 2006.

Hani, J. *Les Métiers de Dieu: préliminaires à une spiritualité du travail*. Paris: Jean-Cyrille Godefroy Editions, 2010.

Hankinson, R. J. 'Substance, Element, Quality, Mixture: Galen's Physics and His Hippocratic Inheritance'. Consulted on 21 June 2018, *Aitia (online)* 7, no. 2 (2017). DOI: 10.4000/aitia.1863.

Al-Hassan, A. Y. 'The Arabic Origin of the *Summa* and Geber Latin Works: A Refutation of Berthelot, Ruska and Newman on the Basis of Arabic Sources'. In *History of Science and Technology in Islam*. http://www.history-science-technology.com/geber/geber.html.

Idem. *Studies in al-Kimya': Critical Issues in Latin and Arabic Alchemy and Chemistry*. Texte und Studien zur Wissenschaftsgeschichte 4. Hildesheim: Georg Olms, 2009.

Heath, T. L. *A History of Greek Mathematics*. 2 vols. Oxford: Clarendon Press, 1921.

Heeffer, A. 'On the curious historical coincidence of algebra and double-entry bookkeeping'. In *Foundations of the Formal Sciences VII: bringing together philosophy and sociology of science*, 32:109–130. College Publications, 2011.

Hermans, J. M. 'Playing-cards, Their Historical Production and Conservation'. *The Conservator* 11, no. 1 (1987): 51–56. DOI: 10.1080/01410096.1987.9995028.

Hicks, A. 'Pythagoras and Pythagoreanism in Late Antiquity and the Middle Ages'. Chap. 20 in *A History of Pythagoreanism*, edited by C. Huffman, 416–434. Cambridge: Cambridge University Press, 2014.

Hicks, A. J. *Composing the World: Harmony in the Medieval Platonic Cosmos*. Oxford University Press, 2017.

Hodgson, M. 'Djaʿfar al-Ṣādik'. *Encyclopaedia of Islam, Second Edition* (consulted online on 8 January 2018).

Holt, C. *Culture and Politics in Indonesia*. Equinox Publishing, 2007.

Holzhausen, J. 'Natur und Gottes Wille im Hermetischen Traktat 'Poimandres''. *Hermes* 120, no. 4 (1992): 483–489.

Horky, P. S. *Plato and Pythagoreanism*. Oxford, New York: Oxford University Press, 2013.

Høyrup, J. *In Measure, Number, and Weight: Studies in Mathematics and Culture*. Albany: State University of New York Press, 1994.

Idem. *Jacopo da Firenze's Tractatus Algorismi and Early Italian Abbacus Culture*. Birkhäuser Verlag, 2007.

Huffman, C. *Archytas of Tarentum: Pythagorean, Philosopher and Mathematician King*. Cambridge: Cambridge University Press, 2010.

Huffman, C. *Philolaus of Croton, Pythagorean and Presocratic: A Commentary on the Fragments and Testimonia with Interpretive Essays*. Cambridge: Cambridge University Press, 1993.

Huffman, C., ed. *A History of Pythagoreanism*. Cambridge: Cambridge University Press, 2014.

Hyman, A., J. J. Walsh and T. Williams. *Philosophy in the Middle Ages: The Christian, Islamic, and Jewish traditions*. Hackett Publishing, 2010.

Idel, M. '*Dignitates* and *Kavod*: Two Theological Concepts in Catalan Mysticism'. *Studia lulliana* 36, no. 92 (1996): 69–78.

Idem. 'Reification of Language in Jewish Mysticism'. *Mysticism and Language*, 1992, 42–79.

Ierodiakonou, K. 'The Greek Concept of Sympatheia and Its Byzantine Appropriation in Michael Psellos'. In *The Occult Sciences in Byzantium*, edited by P. Magdalino and M. Mavroudi, 97–117. Geneva: La Pomme d'or, 2006.

Ifrah, G. *The Universal History of Numbers: From Prehistory to the Invention of the Computer*. Translated by D. Vellos, E. Harding, S. Wood and I. Monk. New York: John Wiley & Sons, 2000.

Irenaeus of Lyon. *St. Irenaeus of Lyons Against the Heresies*. Edited by D. J. Unger and J. J. Dillon. Vol. 1. New Jersey: The Newman Press, 1992.

Irvine, M. *The Making of Textual Culture: 'Grammatica' and Literary Theory 350-1100*. Cambridge: Cambridge University Press, 2006.

Izdebska, A. 'The Attitudes of Medieval Arabic Intellectuals towards Pythagorean Philosophy: different approaches and ways of influence'. In *Cultures in Motion: Studies in the Medieval and Early Modern Periods*, edited by A. Izdebski and D. Jasiński, 25–44. Jagiellonian University Press, December 2014.

Jacobs, L. *The Jewish Religion: A Companion*. Oxford: Oxford University Press, 1995.

Al-Jallad, A. 'The Earliest Stages of Arabic and its Linguistic Classification'. Chap. 16 in *The Routledge Handbook of Arabic Linguistics*, 315–331. Routledge, 2017.

Janssens, J. 'The Ikhwān aṣ-Ṣafā' on King-Prophet Solomon'. In *The Figure of Solomon in Jewish, Christian and Islamic Tradition: King, Sage and Architect*, 241–254. Themes in Biblical Narrative: Jewish and Christian Traditions 16. Brill, 2012.

al-Jīlī, A. *De l'homme universel: Extraits du livre* Al-insān al-kāmil. Translated by T. Burckhardt. Mystiques et religions. Paris: Dervy-Livres, 1986.

Jordan, D. 'A Greek Defixio at Brussels'. *Mnemosyne* 40, nos. 1/2 (1987): 162–166.

Idem. 'Ephesia Grammata at Himera'. *Zeitschrift für Papyrologie und Epigraphik*, no. 130 (2000): 104–107.

Jospe, R. 'Early Philosophical Commentaries on the Sefer Yezirah: Some Comments'. *Revue des études juives* 149, no. 4 (1990): 369–415.

Kadelbach, A. 'Das Akrostichon im Kirchenlied: Typologie und Deutungsansätze'. *Jahrbuch für Liturgik und Hymnologie* 36 (1996): 175–207.

Kahn, C. H. 'Dialectic, Cosmology, and Ontology in the Philebus'. In *Plato's Philebus: Selected Papers from the Eighth Symposium Platonicum*, edited by J. Dillon and L. Brisson, 56–67. Sankt Augustin: Academia Verlag, 2010.

Idem. 'Questions and Categories'. In *Questions*, edited by H. Hiż, 227–278. Dordrecht: Springer, 1978.

Kalvesmaki, J. 'Reading the Early Christian Theology of Arithmetic: Methods of Research and the Search for a Method'. Lecture presented 19/11/2002 at the Catholic University of America. Accessed 16 November 2016. http://www.kalvesmaki.com/Arithmetic/ECNumbersIntro.htm.

Idem. *The Theology of Arithmetic: Number Symbolism in Platonism and Early Christianity*. Hellenic Studies Series 59. Washington, DC: Center for Hellenic Studies, 2013.

Kaplan, A. *Sefer Yetzirah: The Book of Creation in Theory and Practice*. Revised edition. Boston, MA: Weiser Books, 2004.

Karr, D. 'Notes on Editions of *Sefer Yetzirah* in English'. Accessed 2 August 2018. https://www.academia.edu/22875900/Notes_on_Editions_of_Sefer_Yetzirah_in_English_-_full_text_-_revised.

Kashouh, H. *The Arabic Versions of the Gospels: The Manuscripts and their Families*. Arbeiten zur Neutestamentlichen Textforschung 42. Berlin/Boston: Walter de Gruyter, 2012.

Katzenellenbogen, A. 'The Representation of the Seven Liberal Arts'. In *Twelfth-Century Europe and the Foundations of Modern Society*, edited by M. Clagett, 39–55. Madison: The University of Wisconsin Press, 1966.

Kelly, L. G. *The Mirror of Grammar: Theology, Philosophy, and the Modistae*. Vol. v. 101. Amsterdam: J. Benjamins, 2002.

Kemple, B. *The Intersection of Semiotics and Phenomenology: Peirce and Heidegger in Dialogue*. Vol. 20. Semiotics, Communication and Cognition. Berlin/Boston: Walter de Gruyter, 2019.

Kennedy-Day, K. *Books of Definition in Islamic Philosophy: The Limits of Words*. London & New York: RoutledgeCurzon, 2003.

King, D. 'Elements of the Syriac Grammatical Tradition as these Relate to the origins of Arabic grammar'. In *The Foundations of Arabic Linguistics: Sībawayhi and Early Arabic Grammatical Theory*, edited by A. Marogy. Leiden, Boston: Brill, 2012.

Kingsley, P. *Ancient Philosophy, Mystery, and Magic: Empedocles and Pythagorean tradition*. Oxford: Oxford University Press, 1995.

Klein, E. *A Comprehensive Etymological Dictionary of the Hebrew Language for Readers of English*. Jerusalem: Carta, 1987.

Klein, J. *Greek Mathematical Thought and the Origins of Algebra*. Translated by E. Brann. Cambridge (MA): MIT Press, 1968.

Klibansky, R. *The Continuity of the Platonic Tradition During the Middle Ages: Outlines of a* Corpus Platonicum Medii Aevi. London: Warburg Institute, 1939.

Knipp, D. 'Medieval Visual Images of Plato'. In *The Platonic Tradition in the Middle Ages. A Doxographic Approach*, edited by S. Gersh and M. J. Hoenen, 373–414. Walter de Gruyter, 2002.

Koller, H. 'Stoicheion'. *Glotta* 3./4. No. 34 (1955): 161–174.

Konik, M. 'A reception of the idea of the music of the spheres in the music theory of the twelfth and thirteenth centuries'. *Musica Iagellonica* (Cracow) 6 (2012): 5–50.

Kooten, G. H. van. 'Christianity in the Graeco-Roman World: Socio-political, philosophical, and religious interactions up to the Edict of Milan'. In *The Routledge Companion to Early Christian Thought*, edited by D. J. Bingham, 3–37. Routledge, 2009.

Kotwick, M. E. *Alexander of Aphrodisias and the Text of Aristotle's Metaphysics*. California Classical Studies, 2016. http://escholarship.org/uc/item/16q3c0w4.

Kraus, P. *Jābir ibn Ḥayyān. Contribution à l'histoire des idées scientifiques dans l'Islam I: Le corpus des écrits jabiriens*. Mémoires de l'Institut d'Egypte 44. Cairo: Institut français d'archéologie orientale, 1942.

Idem. *Jābir ibn Ḥayyān. Contribution à l'histoire des idées scientifiques dans l'Islam II: Jābir et la science grecque*. Mémoires de l'Institut d'Egypte 45. Cairo: Institut français d'archéologie orientale, 1943.

Kravel-Tovi, M., and D. Moore. *Taking Stock: Cultures of Enumeration in Contemporary Jewish Life*. The Modern Jewish Experience. Indiana University Press, 2016.

Kroll, W. 'Onomatomanteia'. In *RE*, 18,1:517–520. 1939.

Kugel, J. L. *Traditions of the Bible: A Guide to the Bible As It Was at the Start of the Common Era*. Harvard University Press, 1998.

Kukkonen, T. 'Imagination in philosophy'. *Encyclopaedia of Islam, THREE*, 2018. DOI: http://dx.doi.org/10.1163/1573-3912_ei3_COM_32425.

Kunitzsch, P. 'The Transmission of Hindu-Arabic Numerals Reconsidered'. In *The Enterprise of Science in Islam: New Perspectives*, edited by J. P. Hogendijk and A. I. Sabra, 3–21. Cambridge, MA: MIT Press, 2003.

Kurdzialek, M. 'Elementum – Die Deutung der aristotelischen Definition des στοιχείου durch David von Dinant'. In *Sprache und Erkenntnis im Mittelalter. Akten des VI. Internationalen Kongresses für mittelalterliche Philosophie*, 580–584. Miscellanea Mediaevalia, 13/2. Berlin, New York, 1981.

Lagercrantz, O. *Elementum: eine lexikologische Studie, I*. Vol. 1. Akademiska bokhandeln, 1911.

Lahe, J. *Gnosis und Judentum: alttestamentliche und jüdische Motive in der gnostischen Literatur und das Ursprungsproblem der Gnosis*. Nag Hammadi and Manichaean Studies 75. Originally presented as a PhD thesis–University of Tartu. Leiden: Brill, 2012.

Landau, R. *The Philosophy of Ibn ʿArabi*. 1959. Routledge, 2013.

Lane, E. W. *Arabic-English Lexicon*. 2 vols. Cambridge: Islamic Texts Society, 1984.

Laspia, P. 'L'excursus fonologico del Teeteto e la testualità platonica. A cosa pensiamo quando parliamo di 'elementi' e 'sillabe'?' In *Platone e la teoria del sogno nel Teeteto. Atti del Convegno internazionale Palermo*, edited by G. Mazzarra and V. Napoli, 181–204. Sankt Augustin: Academia Verlag, 2008.

Leal, P. G. 'O espelho dos hieróglifos: da ruína das letras egípcias à sua reinvenção quimérica entre os séc. XV e XVII'. PhD diss., Universidade Federal do Rio Grande do Norte, Brazil, 2008.

Lebedev, A. 'The Metaphor of *Liber Naturae* and the Alphabet Analogy in Heraclitus' Logos Fragments'. In *Heraklit im Kontext*, edited by E. Fantino, U. Muss, C. Schubert and K. Sier, 231–267. Studia Praesocratica 8. Walter de Gruyter, 2017.

Lehmann, C. *Phonetik und Phonologie*. Erfurt: Universität Erfurt, 2007. http://www.christianlehmann.eu/ling.

Lehmann, R. '27-30-22-26 - How Many Letters Needs an Alphabet? The Case of Semitic'. In *The Idea of Writing: Writing Across Borders*, edited by A. de Voogt and J. Quack, 11–52. Leiden: Brill, 2012.

Leibniz, G. W. 'Explanation of Binary Arithmetic'. Trans. and edited by Lloyd Strickland, 2007. Accessed 16 November 2016. http://www.leibniz-translations.com/binary.htm#1.

Lernould, A. 'Boèce. Consolation de Philosophie III, *metrum* 9'. In *Plato Revived: Essays on Ancient Platonism in Honour of Dominic J. O'Meara*, 376–395. Beiträge zur Altertumskunde 317. Berlin/Boston: Walter de Gruyter, 2013.

Leslie, C., and A. Young. *Paths to Asian Medical Knowledge*. Comparative Studies of Health Systems and Medical Care. Berkeley: University of California Press, 1992.

A Latin Dictionary. Edited by C. T. Lewis and C. Short. Oxford: Oxford University Press, 1966.

Lewisohn, L. 'Ali ibn Abi Talib's Ethics of Mercy in the Mirror of the Persian Sufi Tradition'. In *The Sacred Foundations of Justice in Islam: The Teachings of ʿAlī ibn Abī Ṭālib*, edited by M. Lakhani, 109–145. Bloomington: World Wisdom, Inc, 2006.

Lida de Malkiel, R. ‘Perduración de la literatura antigua en Occidente’. Review of E. R. Curtius *Europäische Literatur*, *Romance Philology* 5 (1951): 99–131.

Liebes, Y. ‘שבע כפולות בג״ד כפר״ת: על הריש הכפולה ועל רקעו של ספר יצירה (The Seven Double Letters BGD KFRT: On the Double REISH and the Background of “Sefer Yeẓira”)’. *Tarbiz* 61, no. 2 (AM 5752/1992 AD): 237–247.

Idem. תורת היצירה של ספר היצירה *(*Ars poetica *in Sefer Yetsira)*. Tel Aviv: Schocken, 2000.

Lindbeck, K. *Elijah and the Rabbis: Story and Theology*. New York: Columbia University Press, 2010.

Locks, G. *The Spice of Torah: Gematria /* תורה וגמטריא. New York: Judaica Press, 1985.

Lohmann, J. ‘Mathematik und Grammatik’. *Beiträge zur Einheit von Bildung und Sprache im geistigen Sein. Festschrift zum* 80 (1980): 301–313.

Lojkine, S. ‘«Dans le moment qui précède l’explosion...» – Temporalité, représentation et pensée chez Diderot’. In *Zeitlichkeit in Text und Bild*, edited by F. Sick and C. Schöch, 41–57. Heidelberg: Universitätsverlag Winter, 2007.

Lonergan, B. *Verbum: Word and idea in Aquinas*. Vol. 2. Collected Works of Bernard Lonergan. University of Toronto Press, 1997.

Loopuyt, M. ‘Dans l’océan des musiques traditionnelles’. *Ultreïa!/Cahiers métaphysiques*, no. 16 (2018): 158–167.

Lory, P. ‘La magie des lettres dans le “Šams al-maʿarif” d’al-Būnī’. *Bulletin d’études orientales* 39/40 (1987): 97–111.

Idem. ‘La philosophie du nombre chez les Ikhwân al-Safâ’’. *Annuaire de l’École pratique des hautes études. V^e^ section, Sciences religieuses* 101 (1992): 211–214.

Idem. ‘La science des lettres en terre d’Islam: le chiffre, la lettre, l’oeuvre’. In *La contemplation comme action nécessaire*, 89–101. Cahiers de l’Université Saint Jean de Jérusalem 11. Berg International Éditeurs, 1985.

Idem. Review of *Les « Frères de la pureté », pythagoriciens de l’Islam*, by Y. Marquet. *Bulletin critique des Annales islamologiques* 23 (2007): 27–28. http://www.ifao.egnet.net/bcai/23/9/.

Lougovaya, J. ‘A Perfect Pangram: A Reconsideration of the Evidence’. *Greek, Roman, and Byzantine Studies* 57, no. 1 (2017): 162–190.

Lovejoy, A. O. *The Great Chain of Being: A Study of the History of an Idea*. 2001 reprint. Cambridge, MA/ London: Harvard University Press, 1964.

Lumpe, A. ‘Der Begriff “Element” im Altertum’. *Archiv für Begriffsgeschichte* 7 (1962): 285–293.

Luz, C. *Technopaignia, Formspiele in der griechischen Dichtung*. Mnemosyne Supplements. Monographs on Greek and Roman Language and Literature 324. Leiden: Brill, 2010.

Macris, C. ‘Pétrôn d’Himère’. In *Dictionnaire des philosophes antiques*, edited by R. Goulet, 5:246–263. 1. Paris: CNRS éditions, 2012.

Madelung, W., and T. Mayer, eds. *Avicenna’s Allegory on the Soul: an Ismaili Interpretation. An Arabic Edition and English Translation of ʿAlī b. Muḥammad b. al-Walīd’s* al-Risāla al-mufīda. Ismaili Texts and Translations 22. London/New York: IB Tauris / The Institute of Ismaili Studies, 2018.

Malhão Pereira, J. M. 'A Evolução da Ciência Náutica e o seu Contributo para o Contacto Entre os Povos'. In *Estudos da história da Náutica e das navegações de alto-mar*, 81–92. Lisbon: Comissão Cultural da Marinha, 2012.

Maloney, L. D. 'A Word Fitly Spoken: Poetic Artistry in the First Four Acrostics of the Hebrew Psalter'. PhD diss., Dept of Religion, Baylor University, 2005.

Mancuso, P. 'Cosmological Traditions in Judeo-Byzantine South Italy: A Preliminary Analysis'. In *From Māshā'allāh to Kepler: Theory and Practice in Medieval and Renaissance Astrology*, edited by C. Burnett and D. G. Greenbaum, 309–324. Sophia Centre Press, 2015.

Manolova, D. 'Discourses of Science and Philosophy in the Letters of Nikephoros Gregoras'. PhD diss., Doctoral School of History, Central European University, 2014.

Marcovich, M. *Studies in Graeco-Roman Religions and Gnosticism*. Studies in Greek and Roman Religion 4. Leiden: Brill, 1988.

Marcus, R. 'A 16th Century Hebrew Critique of Philo'. *Hebrew Union College Annual* 21 (1948): 29–71.

Idem. 'Alphabetic Acrostics in the Hellenistic and Roman Periods'. *Journal of Near Eastern Studies* 6, no. 2 (1947): 109–115.

Marenbon, J. 'Mauro Zonta and the Unity of Medieval Philosophy'. *Mediterranea. International Journal on the Transfer of Knowledge* 3 (2018): 211–212. DOI: 10.21071/mijtk.v0i3.10775.

Marmo, C., and S. Bonfiglioli. 'Simboli, voci, oggetti et similia. Note di discussione su: F. Lo Piparo, *Aristotele e il linguaggio. Cosa fa di una lingua una lingua*'. *Histoire Épistémologie Langage (Les syncatégorèmes)* 25, no. 2 (2003): 161–194. DOI: 10.3406/hel.2003.2214.

Marquet, Y. 'Les Frères de la pureté, pythagoriciens de l'Islam'. *SEHA, Édidit*, 2006.

Martimort, A.-G. 'Le nouveau rite de la dédicace des églises'. *La Maison-Dieu* 70 (1962): 6–31.

Martin, J. D. 'Theurgy in the Medieval Islamic World: Conceptions of Cosmology in Al-Būnī's Doctrine of the Divine Names'. Master's thesis, Dept of Arab and Islamic Civilizations, The American University in Cairo, 2011.

Marx, K. 'The Difference Between the Democritean and Epicurean Philosophy of Nature'. In *Marx/Engels Collected Works, Vol. 1 (1835–1843)*, 25–105. New York: International Publishers, 1975.

Mastrocinque, A. 'Le pouvoir de l'écriture dans la magie'. *Cahiers « Mondes anciens »*, no. 1 (2010). DOI: 10.4000/mondesanciens.168.

Mayer, T. 'Shahrastānī's *Mafātīḥ al-Asrār*: A Medieval Ismaili System of Hermeneutics'. Chap. 8 in *The Spirit and the Letter: Approaches to the Esoteric Interpretation of the Qur'an*, edited by A. Keeler, S. H. Rizvi and M. Nguyen. Oxford University Press, 2016.

Idem. 'Theology and Sufism'. Chap. 13 in *The Cambridge Companion to Classical Islamic Theology*, 258–287. Cambridge University Press, 2008.

Idem. 'Traditions of Esoteric and Sapiential Quranic Commentary'. In *The Study Quran: A New Translation and Commentary*, edited by S. H. Nasr, 1659–1678. Harper Collins, 2015.

McNeil, B. 'Jesus and the Alphabet'. *The Journal of Theological Studies*, 1976, 126–128.

Melvin-Koushki, M. S. 'The Quest for a Universal Science: The Occult Philosophy of Ṣā'in al-Dīn Turka Iṣfahānī (1369--1432) and Intellectual Millenarianism in Early Timurid Iran'. PhD diss., Yale University, 2012.

Menn, S. 'Al-Fārābī's *Kitāb al-Ḥurūf* and his Analysis of the Senses of Being'. *Arabic Sciences and Philosophy* 18, no. 1 (March 2008): 59–97.

Menninger, K. *Zahlwort und Ziffer: eine Kulturgeschichte der Zahl*. 2 vols. Göttingen: Vandenhoeck & Ruprecht, 1957.

Merlan, P. *From Platonism to Neoplatonism*. 3rd ed. Revised. The Hague: Martinus Nijhoff, 1975.

Idem. 'Zur Zahlenlehre im Platonismus (Neuplatonismus) und im *Sefer Yezira*'. *Journal of the History of Philosophy* 3, no. 2 (1965): 167–181.

Mir-Kasimov, O. *Words of Power – Ḥurūfī Teachings Between Shiʿism and Sufism in Medieval Islam*. London: I.B. Tauris, Institute of Ismaili Studies, 2015.

Mitscherling, J., and P. Fairfield. *Artistic Creation: A Phenomenological Account*. Lanham, Maryland: Rowman & Littlefield, 2019.

Monfasani, J. 'Aristotle as Scribe of Nature: The Title-Page of MS Vat. Lat. 2094'. *Journal of the Warburg and Courtauld Institutes* 69 (2006): 193–205.

Moore, E., and J. D. Turner. 'Gnosticism'. Chap. 10 in *The Cambridge History of Philosophy in Late Antiquity*, edited by L. P. Gerson, 174–196. Cambridge University Press, 2010.

Mopsik, C. *Le livre hébreu d'Hénoch, ou, Livre des Palais*. Collection « Les Dix Paroles ». Lagrasse: Verdier, 1989.

Motta, A. 'Materia e forma dei miti. Su mimesi platonica e simbologia omerica'. *Revista Estética e Semiótica* (Brasilia) 5, no. 2 (2015): 19–41.

Mouzala, M. 'Logos as ʿsumplokē or koinonia tōn peri tēn ousian dēlomatōnʾ in Plato's Sophist'. *Platonic Investigations* 10, no. 1 (2019): 35–75. DOI: 10.25985/PI.10.1.03.

al-Munjid fī al-lugha. Beirut: Dār al-mashriq, 2005.

Munk, M. L. *The Wisdom in the Hebrew Alphabet: the Sacred Letters as a Guide to Jewish Deed and Thought*. ArtScroll Series. New York: Mesorah Publications, 1983.

Myerston, J. 'Divine Names in the Derveni Papyrus and Mesopotamian Hermeneutics'. *Trends in Classics* 5, no. 1 (2013): 74–110.

Nakamura, K. 'Imām Ghazālī's Cosmology Reconsidered with Special Reference to the Concept of "*Jabarūt*"'. *Studia Islamica* 80 (1994): 29–46.

Nasr, S. H. *An Introduction to Islamic Cosmological Doctrines*. New York: State University of New York Press, 1993.

Idem. *Islamic Science: An Illustrated Study*. London: World of Islam Festival, 1976.

Al-Nāṣṣir, A. 'Sibawayh the Phonologist: A Critical Study of the Phonetic and Phonological Theory of Sibawayh as Presented in his Treatise *Al Kitāb*'. PhD diss., University of York, 1985.

Netton, I. R. *Muslim Neoplatonists: An Introduction to the Thought of the Brethren of Purity (Ikhwān Al-Ṣafāʾ)*. Psychology Press, 2002.

Der neue Pauly : Enzyklopädie der Antike. Edited by H. Cancik, H. Schneider and A. Pauly. 19 vols. Stuttgart: J.B. Metzler, 1996–2003.

Newell, J. P. *Listening for the Heartbeat of God: A Celtic Spirituality*. London: SPCK, 1997.

Noegel, S., J. Walker and B. Wheeler, eds. *Prayer, Magic, and the Stars in the Ancient and Late Antique World*. Magic in History. Pennsylvania State University, 2003.

Nussbaum, M. C. 'Eleatic Conventionalism and Philolaus on the Conditions of Thought'. *Harvard Studies in Classical Philology*, no. 83 (1979): 63–108.

O'Connor, J. J., and E. F. Robertson. 'Al-Sabi Thabit ibn Qurra al-Harrani'. Accessed 1 December 2016. http://www-history.mcs.st-andrews.ac.uk/Biographies/Thabit.html.

O'Loughlin, T. 'The Mysticism of Number in the Medieval Period Before Ériugena'. In *The Perennial Tradition of Neoplatonism*, edited by J. J. Cleary, 397–415. Leuven University Press, 1997.

O'Meara, D. J. *Pythagoras Revived: Mathematics and Philosophy in Late Antiquity*. Oxford: Oxford University Press, 1990.

Obrist, B. 'Le diagramme isidorien des saisons, son contenu physique et les représentations figuratives'. *Mélanges de l'Ecole française de Rome. Moyen-Age* 108, no. 1 (1996): 95–164. DOI: 10.3406/mefr.1996.3481.

Odeberg, H. *3 Enoch: Or, The Hebrew Book of Enoch*. Ktav Publishing House, 1973.

Oliver, S. 'Augustine on Creation, Providence and Motion'. *International Journal of Systematic Theology* 18, no. 4 (2016). DOI: 10.1111/ijst.12171.

d'Onofrio, G. 'La teologia della croce in epoca carolingia'. In *La croce, Iconografia e interpretazione, Atti del Convegno Internazionale di Studi*, edited by B. Ulianich, 2:271–320. Napoli: D'Auria, 2007.

Oxford Latin Dictionary. Clarendon Press, 1968.

Ozanam, A.-F. *Dante et la philosophie catholique au treizième siècle*. Paris: Lecoffre fils et Cie., 1872.

Pallis, D. 'Φίλων ο Αλεξανδρέας'. *Great Orthodox Christian Encyclopedia* (Athens) 12 (2015): 551–556.

Panofsky, E. *Gothic Architecture and Scholasticism*. New York: Meridian Books, 1957.

Pappas, A. 'The Treachery of Verbal Images: Viewing the Greek *technopaegnia*'. In *The Muse at Play: Riddles and Wordplay in Greek and Latin Poetry*, edited by J. Kwapisz, D. Petrain and M. Szymański, 199–224. Beiträge zur Altertumskunde 305. Walter de Gruyter, 2013.

Paramelle, J. 'Christianisme byzantin'. *Annuaire de l'École pratique des hautes études. V^e^ section, Sciences religieuses* 88 (1979): 379–386.

Parri, I. 'Tra ermetismo antico ed ermetismo medievale: l'*Asclepius*'. In *Adorare caelestia, gubernare terrena. Atti del Colloquio Internazionale in onore di Paolo Lucentini*, edited by P. Arfé, I. Caiazzo and A. Sannino, 43–58. Turnhout, 2011.

Pasnau, R. 'Abstract Truth in Thomas Aquinas'. Chap. 3 in *Representation and Objects of Thought in Medieval Philosophy*, edited by H. Lagerlund, 33–62. Studies in Medieval Philosophy. Ashgate, 2007.

Patai, R. *The Jewish Alchemists: A History and Source Book*. Princeton University Press, 1994.

Pattaro, E. *A Treatise of Legal Philosophy and General Jurisprudence (Volume 1: The Law and The Right)*. Dordrecht: Springer, 2005.

Pierris, A. L. 'Pythagoreanism in the Meno and Platonic Development'. In *Symposium Platonicum Therense*. Santorini, June 2001.

Platner, S. B. 'Notes on Elementum'. *The Classical Review* 8, no. 8 (1894): 344–345.

Poleg, E., and L. Light, eds. *Form and Function in the Late Medieval Bible*. Library of the Written Word–The Manuscript World. Leiden: Brill, 2013.

Psellus, M. *Philosophica minora*. Edited by J. Duffy. Leipzig: Teubner, 1992.

Psychoyos, D. K. 'The Forgotten Art of Isopsephy and the Magic Number KZ'. *Semiotica* 2005, nos. 154-1/4 (2005): 157–224. DOI: 10.1515/semi.2005.2005.154-1-4.157.

Quispel, G. *Gnostica, Judaica, Catholica. Collected Essays of Gilles Quispel*. Edited by J. Oort. Nag Hammadi and Manichaean Studies 55. Brill, 2008.

Radt, S., ed. *Tragicorum Graecorum fragmenta, vol. 4*. Göttingen: Vandenhoeck & Ruprecht, 1977.

Rashed, R., and R. Morelon. 'Thābit b. Ḳurra'. *Encyclopaedia of Islam, Second Edition*. DOI: 10.1163/1573-3912_islam_SIM_7507.

Ritoré Ponce, J. *La teoría del nombre en el neoplatonismo tardío*. Cádiz: Universidad de Cádiz, 1992.

Robbins, F. E. 'Arithmetic in Philo Judaeus'. *Classical Philology* 26, no. 4 (October 1931): 345–361.

Robins, R. H. *The Byzantine Grammarians: Their Place in History*. Vol. 70. Trends in Linguistics: Studies and Monographs. Berlin/New York: Mouton de Gruyter, 1993.

Roche, L. 'Dieu créa l'artiste à son image : Le thème du Dieu-artiste dans la théorie artistique moderne (XVe-XVIIIe siècle)'. Master's thesis, Sorbonne, Paris IV, 2012.

Rogge, C. 'Nochmals lat. elementum'. *Zeitschrift für vergleichende Sprachforschung auf dem Gebiete der Indogermanischen Sprachen* 51, no. 1 (1923): 154–158.

Roochnik, D. 'Counting on Number: Plato on the Goodness of Arithmos'. *The American Journal of Philology* 115, no. 4 (1994): 543–563.

Rothacker, E., and W. Perpeet. *Das 'Buch der Natur'. Materialien und Grundsätzliches zur Metapherngeschichte*. Bonn: Bouvier Verlag H. Grundmann, 1979.

Runia, D. T. *On the Creation of the Cosmos according to Moses*. Philo of Alexandria Commentary Series 1. Leiden: Brill, 2001.

Idem. 'Why Does Clement of Alexandria Call Philo "The Pythagorean"?' *Vigiliae Christianae* 49, no. 1 (1995): 1–22.

Ryle, G. 'Letters and syllables in Plato'. *The Philosophical Review*, no. 69 (1960): 431–451.

Safi, O. 'Qur'an of Nature: Cosmos as Divine Manifestation in Qur'an and Islamic Spirituality'. *Religions*, no. 2012 (2012): 127–134.

Saif, L. 'From *Ġāyat al-ḥakīm* to *Šams al-maʿārif*: Ways of Knowing and Paths of Power in Medieval Islam'. *Arabica* 64, nos. 3-4 (2017): 297–345.

Idem. 'Ikhwān Al-Ṣafā"s Religious Reform and Magic: Beyond the Ismaʿili Hypothesis'. *Journal of Islamic Studies*, March 2018. DOI: 10.1093/jis/ety020.

Saito, K. 'Mathematical Reconstructions Out, Textual Studies In: 30 years in the historiography of Greek mathematics'. *Revue d'histoire des mathématiques* 4, no. 1 (1998): 131–142.

Schäfer, P. *Mirror of his Beauty: Feminine Images of God from the Bible to the Early Kabbalah*. Princeton University Press, 2018.

Schimmel, A. *Islamic Calligraphy*. Iconography of Religions, XXII, 1. Leiden: Brill, 1970.

Schofield, M. 'Archytas'. Chap. 3 in *A History of Pythagoreanism*, edited by C. Huffman, 69–87. Cambridge: Cambridge University Press, 2014.

Schöttgen, J. C. *Horae Hebraicae et Talmudicae in universum Novum Testamentum*. Leipzig: Hekel, 1733.

Schreiner, K. 'Abecedarium. Die Symbolik des Alphabets in der Liturgie der mittelalterlichen und frühneuzeitlichen Kirchweihe'. In *'Das Haus Gottes, das seid ihr selbst': mittelalterliches und barockes Kirchenverständnis im Spiegel der Kirchweihe*, edited by R. M. Stammberger, A. Warnke and C. Sticher, 143–187. Erudiri Sapientia 6. Walter de Gruyter, 2007.

Schwabe, W. *'Mischung' und 'Element' im griechischen bis Platon: Wort- und begriffsgeschichtliche Untersuchungen, insbesondere zur Bedeutungsentwicklung von Stoicheion*. Bouvier Verlag H. Grundmann, 1980.

Sedley, D. 'Hesiod's *Theogony* and Plato's *Timaeus*'. In *Plato and Hesiod*, edited by G. Boys-Stones and J. Haubold, 246–258. Oxford University Press, 2010.

Segol, M. *Word and Image in Medieval Kabbalah*. The New Middle Ages. New York: Palgrave MacMillan, 2012.

Sendor, M. B. 'The Emergence of Provençal Kabbalah: Rabbi Isaac the Blind's *Commentary on Sefer Yeẓirah*. Vol. 2, translation and annotation'. PhD diss., Near Eastern Languages and Civilizations, Harvard University, 1994.

Seppänen, M. 'Defining the Art of Grammar: Ancient perceptions of γραμματική and grammatica'. PhD diss., Dept of Classics, University of Turku, 2014. http://www.utupub.fi/bitstream/handle/10024/94624/AnnalesB379Seppanen.pdf?sequence=2.

Serrado, J. 'Playing Cards with God: The Visions of the Portuguese Nun, Mariana da Purificação'. *Early Modern Women* 12, no. 1 (2017): 143–151. DOI: https://doi.org/10.1353/emw.2017.0052.

Sesiano, J. 'Les Carrés magiques de Manuel Moschopoulos'. *Archive for History of Exact Sciences* 53, no. 5 (1998): 377–397.

Idem. *The* Liber Mahameleth*: A 12th-century mathematical treatise*. Springer, 2014.

Shah-Kazemi, R. *Justice and Remembrance: Introducing the Spirituality of Imam ʿAlī*. London & New York: I.B. Tauris / The Institute of Ismaili Studies, 2007.

Sherwood Taylor, F. 'The Alchemical Works of Stephanos of Alexandria, part 2'. *Ambix*, June 1938, 116–139. DOI: 10.1179/amb.1938.2.1.39.

Shiloah, A. 'The Origin of Language and its Link with Music according to the Theory of Jābir ibn Ḥayyān'. *Al-Masāq* 21, no. 2 (2009): 153–162.

Siddiqi, M. Z. *Ḥadīth Literature: Its Origin, Development and Special Features*. Cambridge: Islamic Texts Society, 1993.

Sihler, A. L. *New Comparative Grammar of Greek and Latin*. Oxford University Press, 2008.

Simon, M. 'Remarques sur l'angélolâtrie juive'. *Comptes rendus des séances de l'Académie des Inscriptions et Belles-Lettres* 115, no. 1 (1971): 120–134. DOI: 10.3406/crai.1971.12605.

Sirat, C. 'Les lettres hébraïques, leur existence idéale et matérielle'. In *Perspectives on Jewish Thought and Mysticism*, edited by A. L. Ivry, A. Arkush and E. Wolfson, 237–256. Dedicated to the memory of Alexander Altmann. Amsterdam: Harwood Academic Publishers, 1998.

Sittig, E. 'Abecedarium und elementum'. In *Satura: Früchte aus der antiken Welt*, by O. Weinreich, 131–138. Baden-Baden: Verlag für Kunst und Wissenschaft, 1952.

Slaveva-Griffin, S. 'Number in the Metaphysical Landscape'. In *The Routledge Handbook of Neoplatonism*, by P. Remes and S. Slaveva-Griffin, 200–215. Routledge, 2014.

Slinko, A. *Algebra for Applications: Cryptography, Secret Sharing, Error-Correcting, Fingerprinting, Compression*. Springer Undergraduate Mathematics Series. Springer International Publishing, 2015.

Smith, W. *The Wisdom of Ancient Cosmology: Contemporary Science in Light of Tradition*. Oakton, VA: Foundation for Traditional Studies, 2004.

Staehle, K. *Die Zahlenmystik bei Philon von Alexandreia*. Leipzig: Teubner, 1931.

Steinschneider, M. 'Die lautern Brüder, ein Freimaurerorden des XI. Jahrhunderts'. *Hebräische Bibliographie* 2 (1859): 91–92. (republished in F. Sezgin (ed.), *Rasā'il Ikhwān aṣ-Ṣafā'*. Texts and Studies. Frankfurt: IGAIW, 1999).

Stepaniants, M., and J. Behuniak. *Introduction to Eastern Thought*. Walnut Creek, CA: AltaMira Press, 2002.

Stroumsa, G. G. '*The Mystery of the Greek Letters*: a Byzantine Kabbalah?' *Historia religionum* 6, no. 6 (2014): 35–44.

Idem. 'The Scriptural Galaxy of Late Antiquity'. In *A Companion to Religion in Late Antiquity*, 553–570. Hoboken, NJ: Wiley Blackwell, 2018.

Stroumsa, S. 'Wondrous Paths: The Ismāʿīlī Context of Saadya's 'Commentary on *Sefer Yeṣira*''. *Bochumer Philosophisches Jahrbuch für Antike und Mittelalter* 18, no. 1 (2015): 74–90.

Suárez de la Torre, E. 'Himno(s)-plegaria a Hermes en los papiros mágicos griegos'. In *Ex Pluribus Unum*, edited by C. Scibonae and A. Mastrocinque, 193–212. Edizioni Quasar, 2015.

Suárez de La Torre, E., M. Blanco Cesteros and E. Chronopoulou. 'A la vez igual y diferente: notas sobre el vocabulario "religioso" de los textos mágicos griegos'. In *Estudios sobre el vocabulario religioso griego*, edited by E. Calderón Dorda and S. Perea Yébenes, 201–233. Monografías de Antigüedad Griega y Romana 49. Madrid–Salamanca: Signifer Libros, 2016.

Sviri, S. '*Kun*-The Existence-Bestowing Word in Islamic Mysticism: A Survey of Texts on the Creative Power of Language'. In *The Poetics of Grammar and the Metaphysics of Sound and Sign*, 35–68. Brill, 2007.

Idem. 'Words of Power and the Power of Words: Mystical Linguistics in the Works of al-Ḥakīm al-Tirmidhī'. *Jerusalem Studies in Arabic and Islam*, no. 27 (2002): 204–244.

Szepes, E. 'Magic Elements in the Prayers of the Hellenistic Magic Papyri'. *Acta Antiqua Academiae Scientiarum Hungaricae Budapest* 24, nos. 1-4 (1976): 205–225.

Tan, P. 'Divine Simplicity in Christianity and Islam: Al-Ghazali, Ibn Rushd, Thomas, and Calvin on the Essence and Attributes of God/Allah'. PhD diss., Vrije Universiteit Amsterdam, 2016. https://research.vu.nl/en/publications/divine-simplicity-in-christianity-and-islam-al-ghazali-ibn-rushd-.

Tannery, P. 'Les chiffres arabes dans les manuscrits grecs'. *Revue Archéologique* 7 (1886): 355–360.

Tanzella-Nitti, G. 'The Two Books Prior to the Scientific Revolution'. *Perspectives on Science & Christian Faith* 57, no. 3 (2005): 235–48.

Tatarkiewicz, W. *A History of Six Ideas: An Essay in Aesthetics*. Melbourne International Philosophy Series 5. The Hague/Boston/London: Martinus Nijhoff, 2012.

Tegmark, M. 'The Mathematical Universe'. *Foundations of Physics* 38 (2008): 101–150. DOI: 10.1007/s10701-007-9186-9.

The Letters of Rabbi Akiba. Washington DC: Government Printing Office, 1897.

The SBL Handbook of Style: For Biblical Studies and Related Disciplines. 2nd ed. Atlanta, Ga.: SBL Press, 2014.

Theological Dictionary of the New Testament. Edited by G. Kittel, G. Friedrich and G. W. Bromiley. 7 vols. Grand Rapids, Mich.: W.B. Eerdmans, 1985.

Thesaurus philosophicus linguae hebraicae (Otsar ha-munahim ha-filosofiyyim). Berlin: Eshkol, 1928.

Thesleff, H., ed. *The Pythagorean Texts of the Hellenistic Period*. Turku: Åbo Akademi, 1965.

Thomann, J. 'The Two Arabic Abjad Numeral Systems: Scientific Innovation and Archaic Tradition'. Pre-publication.

Thrax, D. *The Grammar of Dionysios Thrax*. Translated by T. Davidson. Reprinted from the *Journal of Speculative Philosophy*. St. Louis: George Knapp, 1874.

Todd, R. 'Qūnawī's Scriptural Hermeneutics'. Chap. 7 in *The Spirit and the Letter: Approaches to the Esoteric Interpretation of the Qur'an*, edited by A. Keeler, S. H. Rizvi and M. Nguyen. Oxford University Press, 2016.

Tong, D. *The Real Building Blocks of the Universe*. lecture given at The Royal Institution, London, November 2017. http://www.damtp.cam.ac.uk/user/tong/outreach.html.

Toral-Niehoff, I. *Kitāb Ǧiranīs: Die arabische Übersetzung der ersten Kyranis des Hermes Trismegistos und die griechischen Parallelen*. Quellen und Forschungen zur antiken Welt 43. München: Herbert Utz Verlag, 2015.

Torijano, P. A. *Solomon, the Esoteric King: From King to Magus, Development of a Tradition*. Supplements to the Journal for the Study of Judaism 73. Leiden, Boston, Köln: Brill, 2002.

Trapp, E., ed. 'Lexikon zur byzantinischen Gräzität'. 2016. Accessed 10 December 2016. http://stephanus.tlg.uci.edu/lbg/.

Tschichold, J. *Der chinesische Stempel. Ursprung des Buchdrucks*. Basel: Bucherer, Kurrus & Co, 1972.

Urban, S. [Cave, Edward]. 'English Grammar and English Grammarians'. *The Gentleman's Magazine* (London) 14 (1840): 473–481.

Urvoy, D. '¿En qué medida se vio influido el pensamiento de Ramon Llull por su relación con el islam?' *Quaderns de la Mediterrània*, no. 9 (2008): 287–295.

Uždavinys, A. *Philosophy as a Rite of Rebirth*. Westbury, UK: The Prometheus Trust, 2008.

Idem. *The Golden Chain: An Anthology of Pythagorean and Platonic Philosophy*. Bloomington: World Wisdom, Inc, 2004.

Vajda, G. 'Les lettres et les sons de la langue arabe d'après Abū Ḥātim al-Rāzī'. *Arabica* 8, no. 2 (1961): 113–130.

Idem. 'Recherches sur les commentaires du Livre de la Création'. In *La consolation de l'expatrié spirituel: un commentaire sur le Livre de la Création (Sefer yeṣîrâh)*, edited by P. Fenton. Paris: Éditions de l'éclat, 2008.

van Bladel, K. *The Arabic Hermes: From Pagan Sage to Prophet of Science*. Oxford Studies in Late Antiquity. New York: Oxford University Press, 2009.

Van der Spuy, R. 'Hebrew Alphabetic Acrostics – Significance and Translation'. *Old Testament Essays* 21, no. 2 (2008): 513–532.

Vasiliu, A. '*Eikôn prœter imaginem*. Notes sur le vocabulaire de l'image à la fin de l'Antiquité'. In *De Zénon d'Élée à Poincaré. Recueil d'études en hommage à Roshdi Rashed*, 779–817. Louvain: Peeters, 2004.

Veilleux, A. 'Monachisme et gnose. Première partie : le cénobitisme pachômien et la bibliothèque copte de Nag Hammadi'. *Laval théologique et philosophique* 40, no. 3 (1984): 275–294. DOI: 10.7202/400116ar.

Velázquez, I. 'Intersección de realidades culturales en la antigüedad tardía: el ejemplo de defixiones y filacterias como instrumentos de la cultura popular'. *An Tard*, no. 9 (2001): 149–162.

Idem. 'Léxico y lenguaje de la ciencia y la técnica en el mundo romano. En torno al léxico de la construcción'. In *Ciencia y tecnología en el mundo antiguo*, edited by T. Nogales Basarrate and P. Fernández Uriel. Monografías emeritenses 10. Mérida: Museo Nacional de Arte Romano, 2007.

Ventrella, G. 'P. Yale 1.25 e la *Grammatica* di Dionisio Trace: la *Techne* 'ritrovata'?' *Glotta* 90, nos. 1-4 (2014): 241–268. DOI: 10.13109/glot.2014.90.14.241.

Vergados, A. *The Homeric Hymn to Hermes: introduction, text and commentary*. Texte und Kommentare 41. Berlin/Boston: Walter de Gruyter, 2013.

Versteegh, K., et al., eds. *Encyclopedia of Arabic Language and Linguistics*. 5 vols. Leiden: Brill, 2006.

Viltanioti, I.-F. 'Powers as the Fundamental Entities in Philolaus' Ontology'. *Journal of Ancient Philosophy* VI, no. 2 (2012). DOI: 10.11606/issn.1981-9471.v6i2p1-31.

Vogel, C., and R. Elze. *Le Pontifical romano-germanique du dizième siècle*. 2 vols. Studi e testi 226. Biblioteca apostolica vaticana, 1963.

Vogt-Spira, G. '*Vox* und *Littera*: Der Buchstabe zwischen Mündlichkeit und Schriftlichkeit in der grammatischen Tradition'. *Poetica* 23, nos. 3/4 (1991): 295–327. http://www.jstor.org/stable/43027963.

Vollgraff, W. 'Elementum'. *Mnemosyne* 2, no. 2 (1949): 89–115.

von Fritz, K. 'Pythagoras'. In *RE*, vol. XXIV. 1963.

Idem. Review of *Lore and Science in Ancient Pythagoreanism*, by W. Burkert and E. L. Minar (tr.) *Isis* 65 (1974): 531–531.

Idem. Review of *Weisheit und Wissenschaft. Studien zu Pythagoras, Philolaos und Platon*, by W. Burkert. *Isis* 55, no. 4 (1964): 459–461.

Warburg, A. 'Italienische Kunst und internazionale Astrologie im Palazzo Schifanoja zu Ferrara'. In *Gesammelte Schriften: Die Erneuerung der Heidnischen Antike*, 459–482. Leipzig/Berlin: Teubner, 1932.

Wasserstrom, S. 'Sefer Yesira and Early Islam: A Reappraisal'. *Journal of Jewish Thought and Philosophy* 3, no. 1 (1994): 1–30.

Webster, C. *From Paracelsus to Newton: Magic and the Making of Modern Science*. The Eddington Memorial Lectures. Cambridge University Press, 1982.

Weiss, T. *'Sefer Yeṣirah' and Its Contexts: Other Jewish Voices*. Philadelphia: University of Pennsylvania Press, 2018.

Idem. 'On the Matter of Language: The Creation of the World from Letters and Jacques Lacan's Perception of Letters as Real'. *The Journal of Jewish Thought and Philosophy* 17, no. 1 (2009): 101–115.

Idem. אותיות שנבראו בהן שמיים וארץ *(Letters by which Heaven and Earth Were Created)*. Jerusalem: Bialik Press, 2014.

Wensinck, A. J. *A Handbook of Early Muhammadan Tradition*. Leiden: Brill, 1927.

Idem. 'Al-Ghazālī's Mishkāt al-Anwār [Niche of lights]'. *Semietische Studien uit de Nalatenschap van Prof. dr A.J. Wensinck* (Leiden), 1941.

Whorf, B. L. 'Language, Mind, and Reality'. In *Language, Thought, and Reality*, 246–270. MIT Press, 1956.

Wild, J. D. *Plato's Theory of Man*. Harvard University Press, 1946.

Williams, M. A. *Rethinking 'Gnosticism': an argument for dismantling a dubious category*. Princeton University Press, 1996.

Wilson, N. 'Miscellanea Palaeographica'. *Greek, Roman and Byzantine Studies*, no. 22 (1981): 395–404.

Wisnovsky, R., F. Wallis, J. C. Fumo and C. Fraenkel, eds. *Vehicles of Transmission, Translation, and Transformation in Medieval Textual Culture*. Vol. 4. Cursor mundi. Turnhout: Brepols, 2011.

Witkam, J. J. 'Gazing at the Sun: Remarks on the Egyptian Magician al-Būnī and his Work'. In *O Ye Gentlemen: Arabic Studies on Science and Literary Culture (in Honor of Remke Kruk)*, 183–199. Islamic Philosophy, Theology and Science. Texts and Studies 74. Brill, 2007.

Wolde, E. van, and R. Rezetko. 'Semantics and the Semantics of **ברא**: A Rejoinder to the Arguments Advanced by B. Becking and M. Korpel'. *Journal of Hebrew Scriptures* 11 (January 2011). DOI: 10.5508/jhs.2011.v11.a9.

Wolfson, E. 'Jewish Mysticism: A Philosophical Overview'. In *The Routledge History of Jewish Philosophy*, edited by D. Frank and O. Leaman, 450–498. New York and London: Routledge, 1997.

Idem. 'Text, Context, and Pretext: Review Essay of Yehuda Liebes's *Ars Poetica in Sefer Yetsira*'. *The Studia Philonica Annual* 16 (2004): 218–228.

Wortmann, D. 'Neue magische Texte'. *Bonner Jahrbücher* 168 (1968): 56–111.

Yates, F. A. 'Ramon Lull and John Scotus Erigena'. *Journal of the Warburg and Courtauld Institutes* 23, nos. 1/2 (1960): 1–44.

Zaitsev, E. A. 'The Meaning of Early Medieval Geometry: From Euclid and Surveyors' Manuals to Christian Philosophy'. *Isis* 90, no. 3 (1999): 522–553.

Zhmud, L. '"All Is Number"? "Basic Doctrine" of Pythagoreanism Reconsidered'. *Phronesis* 34, no. 3 (1989): 270–292.

Idem. 'Mathematics vs Philosophy: An alleged fragment of Aristotle in Iamblichus'. *Hyperboreus* 13, nos. 1–2 (2007): 77–88.

Idem. 'What is Pythagorean in the pseudo-Pythagorean literature?', August 2015. https://www.researchgate.net/profile/Leonid_Zhmud.

Zirnis, P. 'The *Kitab Ustuqus al-Uss* of Jabir ibn Hayyan'. PhD diss., New York University, 1979.

Index

ʿAbd Allāh ibn ʿAbbās, 180
ʿAbd Allāh ibn Masʿūd, 180
abecedarium rite, 221–224, 228, 264
abjad, 29, 171ff
Abraham, 125, 206, 219, 221, 224
Abū Bakr al-Ṣiddīq, 180
acrostic, 145, 146, 148, 166, 271
Adam, 107, 218
ahl al-bayt, 176
ahl al-kitāb, 164
Ahmad, Saiyad Nizamuddin, 172n
alchemy, 84, 192, 197, 256; Bezalel, 197; cosmic, 162; elixir, 196; gematria, 45; harmonics, 193; Hermes, 138, 196; Islamic, 193ff; isopsephy, 196; Jābir, 193ff; linguistic, 28; linguistics, 253; magic, 218; *mīzān al-ḥurūf*, 196; of meaning, 28; Pythagorean, 156; scattering of knowledge, 194; *sīmiyā*, 196; *tsaraf*, 215; *al-usṭuquss al-uss*, 194
Alexander of Aphrodisias, 5, 7
Alexander the Great, 98
Alexandria, 98
ʿAlī ibn Abī Ṭālib, 176–177, 180, 195, 267
alphanumeric age, XX, 277–281
alphanumeric cosmology, XIX, XXV
alphanumeric scission, 252, 277, 280
alternation, cosmic, 115
ʿamā', 264
amr, 99, 163, 257, 264n, *see also* λόγος
Anaxilaus of Larissa, 156
Anaximander, 10
Andrieu, Michel, 221, 228
angels, 104–105, 113, 154, 178; ordered in ranks, 23, 174
apocryphal gospels, 128–129
Apollo, 30, 271
Apuleius, 73
Aquinas, 142, 235–236, 268; *Summa Theologiae*, 235, 237, 280; *De divinis nominibus*, 123
Arabic (language), XXIII, 179; Arabic alphabet, 170–171; Arabic letters as numbers, 172–175; letters, 241, 253
ἀρχή, 4, 7, 11, 18, 41, 89, 122, 157, 192
archetype, 32, 76, 83n, 84, 117ff; Judaism, 112; Philo, 117; seal, 117–119
architecture, 87, 122, 132, 167, 194, 218, 221–225, 236, 247, 257; cosmic, 276; Gothic, 280
Archytas, 54, 80
Aristarchus of Samothrace, 15
Aristophanes, 10
Aristotle, 55, 57, 61, 72, 99, 194, 280; *archê*, 66; categories, 59, 65; *Categories*, 60; corpus, 4, 53, 234, 235; *De gen. et corr.*, 4, 5; decad, 58–59; description, 188; *Metaphysics*, 226n; *Metaphysics*, 3–9, 50, 53, 56, 58–59, 189–193, 210, 235; μίμησις, 56; *Physics*, 189; *Poetica*, 6; *Rhetoric*, 191; *Sophistical Refutations*, 64; στοιχεῖον, definition, 3–8, 13, 18, 23, 182, 210
ἀριθμοὶ ψιλοί, 212
arkān, 190, 195, 249, 251
art, 229, 246, 270
articulatio, 6

articulation, 165, 285
Asclepius, 136, 142
Asclepius of Tralles, 74
ἄσημα ὀνόματα, 144
al-Ashʿarī, Abū al-Ḥasan, 164
asmā', *see* Divine Names
Astarābādī, Faḍl Allāh, 269
astronomy, 125, 133
atbash, 158
Athanasius, 162
atomism, 12, 12n, 14, 196; ἄτομος, 15
ʿAṭṭār, 166
Augustine, 228; *De diversis quaestionibus*, 123
Averroes, *see* Ibn Rushd
Avicenna, *see* Ibn Sīnā
awliyā', 267

Bach, Johann Sebastian, XXVI
Baeck, Leo, 207, 211–212
Balázs, János, XXII, 9, 182
Bandt, Cordula, 124–125
Barsanuphius, 129
barzakh, 167, 188, 263
Bedouins, 168, 169
Begriffsgeschichte, XXIII–XXV, 57, 100, 193, 270, *see also* polysemy, semantics
Ben Azzai, 107
Ben Barzillai, Judah, 209
Ben Nissim, Judah, 216
Berschin, Walter, 222n
Bezalel, 105–106, 113; alchemy, 197
Bitton-Ashkelony, Bruria, 130
Blössner, Norbert, XXIII
Boethius, 15, 71, 73–92; *aetas Boethiana*, 92; *De consolatione philosophiae*, 93–94; *Fundamentals of Music*, 69–70
Book of Jubilees, 125, 127
bridge, 81, 82, 274
Brisson, Luc, 234–235
al-Būnī, Aḥmad, 252, 255, 255ff, 262, 268; *Corpus Bunianum*, 255; *Shams al-maʿārif*, 255ff; *al-Uṣūl wa-al-ḍawābiṭ*, 261
Burkert, Walter, XXI, 6, 8, 15, 21, 26, 51, 53, 53ff
Burnet, John, 11
Burnett, Charles, 277n
Bücheler, Franz, 44

cadastre, 236
Calcidius, 71, 234
calligraphy; Arabic calligraphy, 164, 177
Casewit, Yousef Alexander, 267n
Cassiodorus, 73
Cassirer, Ernst, XXIV
Catenae, 122
Chantraine, Pierre, 116n
Charlton, William, 234
children, 18, 128, 272
Chittick, William C., 263
Choeroboscus, Georgius, 46–48
Chomsky, Noam, 49n
Chrisomalis, Stephen, 39n, 41, 46
Christian monastic orders, 281
Church Fathers, 114, 122, 223
Cicero, XVII, 14
Clement of Alexandria, 114
Codex Vigilanus, 278
Colpe, Carsten, 136
Companions of the Prophet, 176
comparative religion, XVIII, XXV
computation, 49n, 55, 105, 123
conceptual history, *see Begriffsgeschichte*
constellations, 13
Coogan, Michael David, XXI
Coomaraswamy, Ananda K., 57n
'co-ordinated essences', 10
Cornelli, Gabriele, 53, 60
corpus incorporeum, 276
Corpus Hermeticum, 136, 138, 141ff
cosmogony, 218
Coullaut Cordero, Jaime, 256
craft, 132

craftsmanship, 29, 67, 76, 83, 105, 108, 109, 115, 116, 123n, 142, 150, 159, 197, 249
creation, 161; verbs, 218
creation verbs, 106, 141
cross, 222–224; bilingual alphabetic cross, 223; decussate crux/*crux decussata*, 222, 225; St Andrew's, 223
Crowley, Timothy J., XXII, 6, 13
Curtius, Ernst R., XXIII, 92

Dā'irat al-aḥruf al-abjadiyya, 259
Daniel, 110–111
Dante Alighieri, 237, 264
De Groot, Jean, 66
De Rossi, Giovanni Bautista, 224, 226n
demiurge, 23, 29, 94, 106, 109n, 118, 123n, 132, 217, 247, 270, *see also* craftsmanship; literary, 275; magic, 181, 271
Democritus, 12, 196
Diels, Hermann, 9n, 11, 13–15; *Elementum*, XXI, 3
Dillon, John M., 112
Dionysius the Areopagite, 213; scholia, 10
Dionysius Thrax, XIX, 73; *Ars grammatica*, 15–16, 169; scholia, 16ff
Divine Names, 103, 109, 113, 148n, 173, 178, 187, 217, 255, 258n, 262; *al-Kātib*, 173; *Khāliq*, 83; *Mudabbir*, 265; *Mufaṣṣil*, 265; *al-Muṣawwir*, 217, 251; *Ṣāniʿ*, 83; τεχνίτης, 83; *Tsayyar*, 217; *Yotser*, 108, 217
division for dominion, 226
division for orientation, 208
Djebbar, Ahmed, 229n
Domninus, 213
Donnolo, Shabbatai, 209
D'Ooge, Martin Luther, 74, 84
Dornseiff, Franz; *Das Alphabet in Mystik und Magie*, XX, XXI
Druart, Thérèse-Anne, XXII, 13
al-Du'alī, Abū al-Aswad, 177
ductus, 183, 208
Dunash ibn Tamim, 209
duplex liber, 185

3 Enoch, 102, 110, 113, 125
Eastern origins, 239
Ebstein, Michael, 183
ἐκμαγεῖον, 234, 264, 276
element, *see also elementum*; στοιχεῖον; ambiguity, 11; 'ascending' and 'descending', 142; concept of, 11
elementum, XVII, 14, 33–36, 141; as letter, 14, 35, 283
Empedocles, 5, 11
Enoch, 137, 138
Ephesian letters, 143, 147, 239
Eriugena, John Scotus, 228–231, 268
ἔρμα, 138
etching, 117
Euclid, 13, 192; *Elements*, 6, 192, 278
Eudemus of Rhodes, 12–13
eurhythmy, 246n
Eusebius of Caesarea, 32
Exodus, 105–107

Fahd, Toufic, 172n
Fakhr al-Dīn al-Ṭurayḥī, 185
al-Fārābī; *Kitāb al-Ḥurūf*, 189
Fates, 179n
Fibonacci, 279
Ficino, Marsilio, 140
Fowler, David H., 48
Förster, Niclas, 156

Gadamer, Hans-Georg, XXIV
Galen, 192, 195
Garrido, Pilar, 255
Geistergespräch, XXVI
gematria, 42, *see also* isopsephism
Genesis, 101–104, 107, 122, 218, 230
γεωδαισία, 226, 260
al-Ghazālī, Abū Ḥāmid, 175n, 254, 255
gnomon, 10, 66–67, 76n

γνῶσις, 150, 152
Gnostic writings, 151–162, *see also* Marcus the Valentinian; *Evangelium Veritatis*, 152–154; *Marsanes*, 154–155
Gnosticism, 112, 151, 161
gold, 19, 238
Gothic style, 70, 280
γράμματα, 16; identified to στοιχεῖον, 16–18, 20, 23
Greek (language), XXIII
Gril, Denis, 183
groma, 224, 225
Gruenwald, Ithamar, 204

habā', 264
Ḥadith literature, 176–179, 185; *Kutub al-sitta*, 177; *Musnad Aḥmad*, 177; *Riyāḍ al-ṣāliḥīn*, 177; *Ṣaḥīḥ Muslim*, 178; Shīʿī hadiths, 180, 187
Halevi, Judah; *Kuzari*, 209, 210
Hallum, Bink, 245n
Ḥamuvayī, Saʿd al-Dīn, 255
Hanegraaff, Wouter J., 136n
Hani, Jean, 109n
al-Harawī, Abū ʿUbayd, 186
harmony, 15, 58, 63, 81, 110n, 175, 245; acoustic harmony, 231
Hayman, A. Peter, 204, 206n, 209, 213
hayūlā, 174, 249, *see also* matter
Hebbelynck, Adolphus, 124
Hebrew (language), XXIII; four alphabetic wheels, 216
Heraclitus, 12
Hermes, 19, 20, 30, 33, 72, 137–138, 150, 196, 218, 225, 271, 273n; Hermes Trismegistus, 135, 140, 149
Hermetica, 135–136, 141; 'practical' Hermetica, 150
Hermetism, 135, 136n, 144; Gnostic writings and, 152; magic texts and, 150–151
Herodotus, 19n
Hexameron, 101, 103, 218
Hicks, Andrew, 63
Hildegard of Bingen, 238
Hilgard, Alfred, 16
Hippolytus, 43–44
ḥisāb al-jummal, 45, 172, 253, *see also* isopsephism
history of ideas, *see Begriffsgeschichte*
Holzhausen, Jens, 136, 142
Homer, 189; *Iliad*, 8, 16
Horace, 15
Huffman, Carl, 51, 53, 60; *Philolaus*, 61ff
Humboldt, Wilhelm von, XXV
ḥurūf, 174, 264n, *see also abjad, ʿilm al-ḥurūf*; *al-ʿilal*, 183; as prepositions, 76; numerals, 248; *ṣawt wa-ḥurūf*, 164; translation, 91, 191, 241

Iamblichus, 71, 98, 235, 245; *Vita*, 72n
Ibn ʿArabī, Muḥyī al-Dīn, XX, 184, 252, 261ff, 268; *al-Futūḥāt al-makkiyya*, 255, 262, 265ff; *Kitāb al-mabādi'*, 262; *Kitāb al-mīm wa-al-wāw wa-al-nūn*, 265; *Tarjumān al-ashwāq*, 268
Ibn Barrajān, 241n, 254, 262n
Ibn Ezra, Abraham, 107, 260, 278
Ibn Isḥāq, Ḥunayn, 192
Ibn Manẓūr; *Lisān al-ʿarab*, 171
Ibn Masarra, 184, 254, 262n
Ibn Nadīm, 189
Ibn Rushd; *Tafsīr Mā baʿd al-ṭabīʿa*, 189
Ibn Sabʿīn, 229n
Ibn Sīnā, 73; *Risāla al-nayruziyya*, 253; *al-Shifā'*, 191
Ibn al-Qifṭī, 243, 260n
Idel, Moshe, 229n
Ifrah, Georges, 277n
Ikhwān al-Ṣafā', 242–252, 262, 265; *Rasā'il*, XX, 73, 183, 242ff, 280
ʿIlliyūn, 173
ʿilm al-ḥurūf, 166–176, 182, 184; Adam, 248; alchemy, 194, 196; Astarābādī, 269; *Cratylus*, 196;

elements, 241; Jesus Christ, 264; prepositions, 189, 257; two branches, 184
images, 145
imitation, *see* μίμησις
impression, 32, 112, 116
informatio, 266, 276
initiation, 14n, 44, 152, 167, 168, 180, 265; ʿAlī, 176; religion and magic, 147
ink, 163, 174, 179, 183, 185, 242, 257, *see also* typography
International Phonetic Alphabet, 25, 140n
inversion, cosmological, 87, 115
Irenaeus of Lyon, 156–160
Isaiah, 108, 111
Isidorus of Seville, 73; *De natura rerum*, 94
isopsephism, 42ff; living practice, 45

Jābir ibn Ḥayyān, 193–197; corpus, 183, 194, 197; the 'Geber problem', 193; *Kitāb al-usṭuquss al-uss*, 194–195; *Kutub al-mawāzīn*, 196–197
Jaʿfar al-Ṣādiq, 180, 240, 241
jafr, 172, *see also* isopsephism
Jeremiah, 108, 219
Jerome, St, 114
Jesus Christ, 122, 128, 146, 153, 227, 264, 265, 273; alpha and omega, 126; as Islamic prophet, 264; λόγος, 122; name, 157, 159
Job, 219
Jospe, Raphael, 209

Kadelbach, Ada, 110n
Kahn, Charles H., 8
Kalvesmaki, Joel, 44n
Karr, Don, 201n
Keil, Heinrich, 34
al-Khalīl ibn Aḥmad al-Farāhīdī, 169
khawārij, 165, 265
al-Khwārizmī, Muḥammad ibn Mūsā, 279
Kittel, Gerhard, XXIII
Klein, Jacob, 49
Koller, Hermann, XXI
Kraus, Paul, 191
Krishna, 273
Kutsch, Wilhelm, 74
Kyranides, 149

Lagercrantz, Otto, XXI
Lallot, Jean, 17
Lamennais, Hugues-Félicité de, 270
Lamentations Rabbah, 110
language, XXV; Middle Ages, XXIII
language of the birds, 166
Laspia, Patrizia, XXII
Latin (language), XXIII
Leibniz, Gottfried Wilhelm, 55n
letters; atoms, 12; cosmogonic role of the alphabet, 23; γράμματα, 16, 17; origin, 20; Phoenician origin of the alphabet, 18; semitic origin, 19
'lettrism', XIXn
liber mundi, 185
Liebes, Yehuda, 207, 213
light, 27, 108, 109, 201n, 231, 238, 241, 267
literature, 275
liturgical literature, 221–222
Llull, Ramon, 229–230
logic, 84, 248
λόγος, 25, 46, 82, *see also* ratio; Abrahamic, 99; Christ, 76; cosmopoietic, 236; descent, 126; design, 84; Hermes, 137; instrument, 209; *logos*-less elements, 142; noetic model, 118; numerical, 234ff; order, 120; Philo, 115ff; Pythagorean, 58ff; reckoning, 142; St John, 122ff; the Word, 162; vs ἔργον, 143
Lohmann, Johannes, XXII
Lory, Pierre, 253, 254n
Lovejoy, Arthur Oncken, 112
lucida materia, 238
Lucretius, XVII, 14, 36; *De rerum natura*, 14n

ludic aspect, 44, 272
Lumpe, Adolf, XXII
Luz, Christine, 145, 281
Luzzatto, Samuel David/Shadal, 107

Macrobius, 71
mādda, 175, 188, 195; ink, 183, 257
magic, 27; 24 letters, 149; and ABC, 147; architecture, 167; cosmic language, 166; cosmogony, 181; cosmopoiesis, 271; critique, 167, 218; divinatory, 40; graphic, 145; Hermes, 150, 271; isopsephy, 44; linguistics, 253; *melothesia*, 31; numerology, 131; phonemes, 143ff; religion, 256; religious status, 147; science, 151; *sīmiyā'*, 172; Solomon, 167; Tarot, 272; transmutation, 218; utterances, 143, 145; vowels, 145, 155; *wahm*, 241
magic square, 245, 251; compendiousness, 260
Magical Papyri, 144ff
Maimonides, 217, 280
makhraj, 265
manṭiq al-ṭayr, 166
maqādīr, 178, 188
Marcion of Sinope, 152n
Marcus the Valentinian, 152, 156–161
Marinus, 99, 192, 213
Marquet, Yves, 244, 250
Martianus Capella, 73
Mary, the Virgin, 237–238
Masi, Michael, 84
materia, 234, *see also hayūlā, mādda*; *mater*, 233; *signata*, 235, 249
matter, *see hayūlā, mādda, materia,* ὕλη
Mayer, Toby, 254n
Māzandarānī, Muḥammad Ṣāliḥ, 187n
measure, 131, 236, 242; forms, 188; ritual, 226
melothesia, 30, 158
Melvin-Koushki, Matthew, 254n
Menaechmus, 6
Menninger, Karl, 38, 41
mensuratio, 226, 260
Merlan, Philip, 81, 211–212
metallurgy, 105, 137, 215
metaphysics, 188
Metatron, 148
Middle Ages; languages of, XXIII
μίμησις, 26, 56, 117, 270; liturgical, 57
mithāl, *see* paradigm
mīzān, 66n, 165n, 194, 195, 197n
monastic literature, 129–130
monotheism, 98, 99
Moschopoulos, Manuel, 260
Moses, 105, 114, 116, 118, 125; Decalogue, 208
'Mundus-Annus-Homo rota', 94–95
Muḥammad, Prophet, 83n, 163, 163n, 169, 195, 267
Mysteria litterarum, 124–129, 147, 156

Nag Hammadi Library, 152ff
naʿl al-nabī, 83n
al-Nasafī, ʿAzīz al-Dīn, 186
navigation, 86n, 208
Neo-Platonism, 13, 55, 71–72, 92, 135, 212, 228, 230
New Testament, 13, 223; Revelation, 126; St John, 58, 122, 269; St Matthew, 123, 126
Nicomachus of Gerasa, 71, 73, 98, 105, 174, 245, 274; *Introduction to Arithmetic*, XX, 72–92, 260
Nietzsche, Friedrich, XXVI
niẓām, 253
nomina; *barbara*, 143; *defixa*, 144, 147
nūr Muḥammad, 267
Nussbaum, Martha C., 50, 62
nuṭq, 165, 166, 209

Odeberg, Hugo, 102
Old Testament, 223
oneiromancy, 272
onomatomancy, 172
onto-images, 146n
order, *see* τάξις

Ordines Romani, 221, 228
Orpheus, 10, 72n
Orphic literature, 148
οὐσία, 7, 10
Ovid, 15

Palamedes, 132
palindrome, 145, 146, 148
pangram, 145, 271, 274
Panofsky, Erwin, 280
paradigm, 81, 83, 87, 115, 188, *see also* archetype
Paramelle, Joseph, 124
participation, 56, 59
Pecorella, Giovan Battista, 17
Pelagius, 231
periodic table, 274
perlative, 86n
Petron of Himera, 9
Philo of Alexandria, 71, 72, 83, 113–121, 123, 142, 196, 209; *De cherubim*, 115; *De mutatione*, 119; *De opif.*, 113–114, 114ff
Philolaus, XX, 54, 57, 60–61; Fragments of, 61–68
philology, XXIII, XXV
Philoponus, John, 74
philosophy, XXIV; comparative philosophy, XVIII
φύσις, 7, 20, 24, 65, 66n, 67, 141, 142
Planudes, Maximus, 278
Plato, XVII, 12, 13, 48–50, 72, 99, 274; corpus, 12–13, 77n; *Cratylus*, 64, 196; *Epinomis*, 80, 107; *Phaedrus*, 33; *Philebus*, 68, 139–141, 208, 241; *Respublica*, 48, 49, 189; scholia, 48; *Theaetetus*, 8n, 13, 143; *Timaeus*, XVII–XVIII, 14, 54–55, 57, 71, 81, 93, 94, 111, 114, 116, 141, 196, 223, 234, 238n, 247, 270, 276
Platonism, 64, 71, 92, 99, 161, 212, 214, 216, 274; Middle Platonism, 116, 121; Sufism and, 254
play, 44, 272
playing cards, 272
Plotinus, 71, 162, 211, 213, 249
Plutarch, 9
polysemy, XXIII, XXV, 17, 122, 188
polytheism, 99
Porphyry, 72
pre-Socratics, 10, 13, 15
prepositional metaphysics, 76, 86
pricking, 83
printing, 32, 117, *see also* typography
Priscian, 35
Proclus, 99, 192, 212, 235, 245, 250, 274; *Theologia Platonica*, 64
προκέντημα, 83
Prometheus, 20
Proverbs, 110
Psalms, 101, 104, 107–109
Psellos, Michael, 232–233
Pseudo-Plutarch, 11
Psychoyos, Dimitris K., 42
Pythagoras, 21, 44, 46, 49, 51, 52, 57, 58, 71; letters' shapes, 23; στοιχεῖα, origin and nature of, 23
Pythagorean physics, 56, 59
Pythagoreanism, XIX, 11, 44, 46, 50–60, 63, 65, 76, 92, 104, 196, 214, 223, 280; 'arithmetic' Pythagoreanism, 68; *Ikhwān al-Ṣafā'* and, 243–245; New Pythagoreanism, 71, 135, 156; Philo, Plato and, 113–114; Platonic Pythagorean arithmetic, 71

Qalonymos b. Qalonymos, 73, 74
quicksilver, 137
Quintilian, 15
Qur'ān, 22, 125, 163n, 253; *āyāt*, 164; exegesis, 179, 186, 256; as *kalām Allāh*, 164; as *kitāb*, 173–175; letter-number and, 173, 175, 182ff; letters of the suras, 180–182; Qur'ānic theurgy, 256, 257; recitation of, 164, 175, 178, 258; revelation of, 163, 169; Sura 1, *Fātiḥa*, 178; Sura 36, *Yā Sīn*, 163n, 180; Sura 55, *al-Raḥmān*, 195; *umm*

al-kitāb, 178

Rabanus Maurus, 227–228
Rashi, 102, 106, 108
ratio, 46, 58, 173; archetypal, 76; geometry, 58; music, 58, 63; Philolaos, 66
ratio, 81, 82, 86, 93, 123; demiurgic, 123; four meanings, 123; translation, 84
al-Rāzī, Abū Ḥātim, 240–242
al-Rāzī, Fakhr al-Dīn, 165
receptacle, 234, 238, 276
resonance, 160
rite, 132, 224, 226, 245
ῥιζώμα, 11
Rogge, Christian, XXI
Rousseau, Adelin, 156
Rūmī, Jalāl ad-Dīn, 255, 280
Runia, David Theunis, 114, 116n
Ryle, Gilbert, XXII

Saʿadyā Gaon, 73n, 204, 209, 212, 214, 262; *Commentary*, 216, 217n; *Kitāb al-mabādi'*, 210
sainthood, 166, 265, 267
Schofield, Malcolm, 59
scholasticism, 280
School of Chartres, 70
Schwabe, Wilhelm, XXI
Sebokht, Severus, 278
Sefer ha-Bahir, 268
Sefer Yetsirah, XVII–XVIII, XX, 73, 86, 125, 130, 201, 223, 240, 268, 270; *Hilkhot Yetsirah*, 218; *Sod ha-ʿIbur*, 219; text, 201–205
sefirah, 205, 206, 211–213, 268; *beli mah*, 212, 214; tally, 107; translation, 214
Segol, Marla, 205, 218
semantics, XXIII, 3, 8, 20, 28, 37, 46, 64, 100, 107, 119, 122, 130, 163n, 178, 188, 190, 195, 239, 272; matter, 233, 234
semioticity, 271
Septuagint, 101, 105, 218
Sergius, 35
Servius, 225
Shah-Kazemi, Reza, 267n
sharīʿa, 218
shekhinah, 238n
Shem, 220
Shīrāzī, Mullā Ṣadrā, 185
Shīʿa Islam, 176, 177, 180, 267; esoteric Shīʿism, 183; Ghulat, 187; Ismāʿīlīs, 184, 187, 267
Sībawayh, 169, 177n
al-Sijzī, Abū Naṣr, 165
Sisyphus, 20
Sittig, Ernst, XXI, 15
snake, 32, 33, 196, 276
Solomon, 109, 166–167
spell/spelling, 141, 147–149, 161, 170, 175, 253; cosmogonic, 273
Speusippus, 54
stamp, 32, 87, 112, 116, 117, 119, 127, 174, 230
stars, 43
Stephanus of Byzantium, 10
stoichedon style, 226, 260, 270; and Hebrew, 31
στοιχεῖον, XVII, *see also* element; alphanumeric duality, XVIII–XIX, 21–22; ἀρχή, 7, 18, 192; cosmology and, XVII, 9; defined, 11; etymology, 8–10, 20–23; identified to γράμμα, 16–18, 20, 23; intermediary nature, 20; musical-rhythmical origin of, 9; number and order, 21; primordiality, 18; as principles, 12–13
Stoics, 116, 121
Stroumsa, Guy G., 98n
Stroumsa, Sarah, 124n, 128
Sufism, 176–177, 180, 183, 184, 252ff, 268, 281
al-Sulamī, Abū ʿAbd al-Raḥmān, 254
sunna, 218
Sunni Islam, 176, 179, 184
surveyors pegs, 276

Sviri, Sara, 183
symbolism, 271
symmetry, 246n

Taautos/Thoth, 33, 138–141, 182, 208
tabdīd al-ʿilm, 194
tafsīr literature, 179, 185
Talmud, 101n, 104, 106, 113, 217; Gemara, 101n
Tanakh, 101–113, 210
tartīl, 175
taṣawwur, 276n
τάξις, 8, 16, 21, 22, 24, 27, 38, 50, 57, 59, 109, 116, 126, 128, 130
Tegmark, Max, 274
τέμενος, 224
Tetraktys, 11, 158, 160
Thābit ibn Qurra, 73n, 74–92, 245, 260
Theano, 59
Thomann, Johannes, 172n
Thomas of Sutton, 236n
al-Tirmidhī, 179
al-Tirmidhī, al-Ḥakīm, 254
Torah, 7, 86, 107, 125, 216; creation of, 102
al-Tustarī, Sahl, 254, 262n
'two books', 185
typography, 112, 115, 127, 230
τύπος, *see* stamp, typography

Uhlig, Gustav, 15
ὕλη, 10, 59, 75, 82, 115, 174, 233, 235
ʿulūm al-ḥarf, 181, 184, *see also ʿilm al-ḥurūf*
unfolding, 131n, 134, 142
Urvoy, Dominique, 229n
usṭuqus, 190ff, 244; etymology, 190; translations, 192

Vajda, Georges, 212, 213n
Van Bladel, Kevin T., 136n
verbum, 123, 238
Viltanioti, Irini-Fotini, 62, 67
Vitruvius, 223
Vogt-Spira, Gregor, XXII
Vollgraff, Wilhelm, XXI
Von Fritz, Kurt, 51
vowels, 154
Vulgate, 101, 105, 218

waqf, 245, 260, 261
Warburg, Aby, XVIII
weaving, 133
weight, 131, 197
Weiss, Tzahi, XXII, 273
Whorf, Benjamin Lee, 28n, 275
wilāya, 267
Wolfson, Elliot R., 204
Wortmann, Dierk, 148
writing; divine origin, 20

Yates, Frances, 229, 230
YHWH *Tzeba'ot*, 22
yotser, 108, 217

Zeno of Alexandria, 213
Zeus, 42; Zeus Stoichadeus, 21, 22
Zhmud, Leonid, 62
Zosimus, 193